

IBM Cognos Proven Practices: IBM Cognos Active Report 10.1.1 Cookbook

Product(s): IBM Cognos Business Intelligence 10.1.1; Area of Interest: Reporting

Skill Level: Advanced

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21 Oct 2011

A description of the various features available within IBM Cognos Active Report and how they can be used to create and distribute interactive reporting applications.

Introduction

Purpose

This document describes the various features available within IBM Cognos Active Report and how they can be used to create and distribute interactive reporting applications.

This document assumes a basic knowledge of IBM Cognos Active Report functionality. For introductory information please refer to the IBM Cognos Active Report section of the IBM Cognos Report Studio User Guide located under the Author and Create folder at <http://publib.boulder.ibm.com/infocenter/cbi/v10r1m1/index.jsp> or the educational content offered by IBM Cognos located at <http://www-304.ibm.com/jct03001c/services/learning/ites.wss/zz/en?pageType=page&c=R985771H68561E16>.

Applicability

The product behaviours described in this document were validated using:

- IBM Cognos Business Intelligence 10.1.1

IBM Cognos Active Report Overview

IBM Cognos Active Report is a report output type that was introduced in IBM Cognos Business Intelligence 10.1 that allows professional report authors to create interactive reporting applications. The following sections will highlight the features, use cases and deployment options for IBM Cognos Active Report.

Key Features

There are many features that are unique to IBM Cognos Active Report that allow the solution to deliver new value to IBM customers. Some of the solution's key features include:

Disconnected

An IBM Cognos Active Report is a stand-alone, self-contained file. This allows users to fully interact with all of the content in their reporting application without being dependent on connectivity to their IBM Cognos BI server. Disconnected reporting simplifies report distribution and consumption within an organization and makes BI

content readily available to external partners and customers.

Highly Interactive

IBM Cognos Active Report controls enable a new level of interactive behaviour. When combined with the solution's speed of thought performance, business users are provided with an engaging end user experience. The flexibility provided by the report controls allows a single reporting application to meet the needs of many users, eliminating the need to customize reports to suit personal viewing preferences.

Portable

Business users need access to their BI information regardless of their location, connectivity or consumption device. The same IBM Cognos Active Report can be consumed in standard web browsers and on the Apple iPad while connected or disconnected from the network. This ensures that business users always have their IBM Cognos BI content available at their fingertips. When consuming an IBM Cognos Active Report in the IBM Cognos Mobile native iPad application, standard report controls are automatically given the native iOS look and feel and interactive gestures such as swiping are enabled. This ensures that users are provided with the native iPad experience that they demand without creating the need for the professional report author to create device specific reports. Additionally, IBM Cognos Active Report content can be consumed in IBM Cognos Business Insight where it can be viewed side by side with your organization's broad analytic content.

Access to Details on Demand

By leveraging drill-through functionality while connected to the IBM Cognos BI server, a business user can drive a deeper analysis without losing context. This allows a user to leverage the performance and interactivity of an IBM Cognos Active Report without sacrificing easy access to additional IBM Cognos content.

Broad Distribution

IBM Cognos Active Report outputs are intuitive to navigate and can be consumed in standard web browsers. This allows a broad base of users to immediately benefit from the full power of a contained IBM Cognos BI solution. In addition, the IBM Cognos Active Report output can be distributed using the existing scheduling and bursting functionality already available within IBM Cognos.

IBM Cognos Platform Security

IBM Cognos Active Report content respects all existing IBM Cognos platform security features. When a user in IBM Cognos Connection runs a reporting application or an administrator schedules and bursts reporting applications to a group of users, all role based security policies will be honoured. Each user will

consume a reporting application that contains only the data that they are authorized to view.

Single Authoring Environment

IBM Cognos Report Studio is used to create standard report output types and IBM Cognos Active Report content. As a result, existing reports can be converted into interactive reporting applications with a single click. This allows existing queries and chart objects to be reused and reduces the amount of time required to build interactive reporting applications.

Common Use Scenarios

The features of IBM Cognos Active Report make it a flexible and portable solution whose benefits can be leveraged across an entire organization and beyond. In order to ensure a successful deployment, it is important to apply the technology to the proper use cases. Some of the ideal use cases for IBM Cognos Active Report include:

Enabling the Mobile Workforce

Mobility is on the rise and is becoming a way of life. Business users expect to be able to consume their business information at anytime regardless of their location or what device they are using. IBM Cognos Active Report enables the mobile workforce by allowing the exact same reporting application to be consumed on the Apple iPad and in standard web browsers. When combined with the disconnected nature of the solution, IBM Cognos Active Report ensures users have the right information to make business decisions while on the go.

Managed Dashboards

Business users expect visually appealing, high performance and interactive dashboards that are able to communicate key business information. IBM Cognos Active Report allows the professional report author to create managed dashboards that can be distributed to a broad audience. The wide array of IBM Cognos Active Report controls ensures that the desired functionality can be achieved and an engaging end user experience can be delivered to business users. The reporting applications are high performance stand-alone files and by leveraging drill through technology, business users can seamlessly connect to more detailed data without losing context. IBM Cognos Active Report allows business users' most common data to be presented in an interactive manner but also provides a simple path for driving a deeper analysis.

Extending BI to External Customers or Partners

Businesses can improve their relationships with customers and increase synergies with partners by improving the flow of information to external users. IBM Cognos

Active Report technology allows interactive reports to be distributed outside the organization without having to worry about granting those users access to the IBM Cognos server. The solution provides a scalable and secure way of sharing information outside the organization without creating an increased support burden.

Deployment Strategies

The portability of IBM Cognos Active Report creates many possible deployment options. IBM Cognos administrators should consider the intended audience and use case when choosing which method is most suitable. Some of the most common scenarios include:

Email Distribution

IBM Cognos Active Report content can be distributed through secure corporate email, which will then allow the recipients to fully interact with all of the data regardless of their connectivity to the IBM Cognos BI server. Scheduling and bursting can be used to ensure that this operation occurs at a non-peak server time to reduce system loads. Additionally, leveraging scheduling and bursting ensures that IBM Cognos role based security restrictions will be honoured. This is a suitable deployment option for distributing IBM Cognos Active Report content to a controlled audience, which could be both internal and external.

Mobile Distribution

The IBM Cognos Mobile native iPad application has the ability to pull IBM Cognos Active Report content to the device in several ways. Scheduling and bursting can be used to send content directly to an end user's iPad. After the report is run on the IBM Cognos BI server, the IBM Cognos Mobile Service transfers the report output to the iPad as soon as the user logs in from their device. Once the content is transferred, it becomes available for offline consumption. Alternatively, the IBM Cognos Connection folder structure can be browsed from the native iPad application and the user can choose to run any IBM Cognos Active Report that they are authorized to access. After running the report, it will be stored locally on the iPad and available for disconnected consumption. Under both of these deployment scenarios the reporting content is protected by an initial IBM Cognos BI server authentication and role based security restrictions. The iPad application also supports email distribution. When a user is sent a reporting application as an attachment to an email, the file will be associated with the IBM Cognos Mobile iPad application and can be directly launched into this environment. The output will then be saved within the application for offline consumption. Scheduling and bursting is the recommended deployment scenario for the mobile workforce as this ensures that the users' IBM Cognos BI content is downloaded and made available for offline consumption whether or not they chose to run that specific report before becoming disconnected.

Network Accessible Location

IBM Cognos Active Report output is a self-contained output. As a result, the single-file output can be placed in a shared location and made accessible to anyone who has access to this network location. Security can be provided via password or login credentials for the remote location to ensure that only people who are authorized to view the content have access to the report. This deployment scenario eliminates the need to email a copy of the file to every recipient, which can reduce network loads. Since a single version of the output is shared, each user consumes the same reporting application and role based security is not honoured.

IBM Cognos Connection

As is the case with standard IBM Cognos reports, IBM Cognos Active Report content resides in IBM Cognos Connection. Assuming the user has the proper folder permissions and privileges, users can easily navigate to the location of the report and gain access to the reporting application. The user can choose to view an existing saved output or re-run the report to get the freshest data possible. By leaving the reports in IBM Cognos Connection, every user must authenticate with the IBM Cognos BI server before gaining access. Additionally, all IBM Cognos role based security will remain intact when a user chooses to run the report. If the end user has not manually downloaded the report from IBM Cognos Connection to their local machine, the content will be inaccessible while disconnected from the server.

Restricting Consumption

Not all IBM Cognos users are authorized to consume IBM Cognos Active Report content. Users must be a named user of Active Report Recipient or at least Enhanced Consumer in order to consume IBM Cognos Active Report content. Alternatively, a PVU based Active Report Recipient license can be purchased so that the reporting applications can be distributed across the entire organization and shared externally.

To ensure license compliance, several techniques can be used. An access code can be placed on the IBM Cognos Active Report output. The author of the report controls this and the access code is the same for all users. Additionally, IBM Cognos Active Report content can be contained in folders with permissions so that unauthorized users are unable to get access to the reports. Finally, deployment scenarios that distribute the content to a controlled group, such as email or mobile distribution, can be used to ensure that only the intended audience receives the reporting output.

The IBM Cognos Active Report Toolbox Items

The following section provides an overview of each of the IBM Cognos Report Studio toolbox items that can be used to create an IBM Cognos Active Report application. This section will also provide a step-by-step example on how to use some of these items.

Variable Text Item

The Variable Text Item is used to display the value of an IBM Cognos Active Report variable. This toolbox item is equivalent to the IBM Cognos Report Studio Report Expression, ParamDisplayValue.

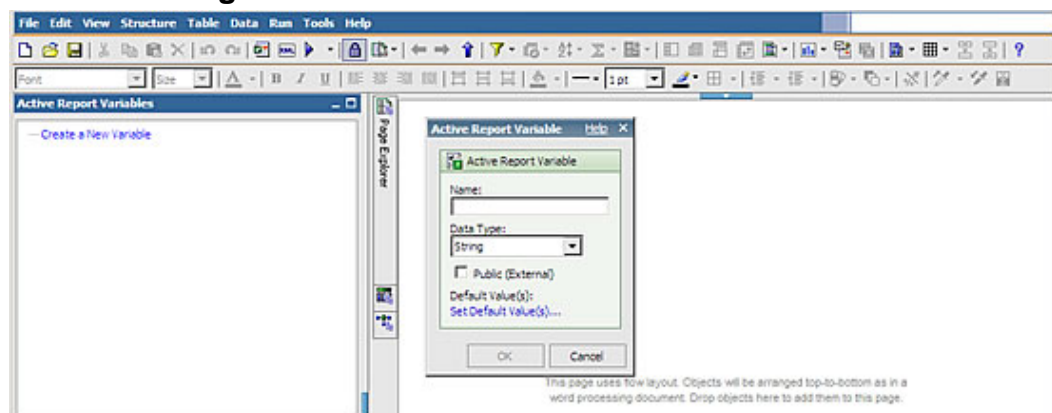
Variable Text Item Step by Step

The following example will step a user through creating a variable, assigning a value to the variable and displaying it on an IBM Cognos Active Report using the Variable Text Item.

1. Within IBM Cognos Report Studio, create a new Blank Active Report.
2. Click on the Active Report Variables tab and click the Create a new variable link.

The following screen capture displays IBM Cognos Report Studio with the Active Report Variable tab selected. It also displays the Active Report Variable dialog box that is presented to the user after clicking the Create a new variable link. The Active Report Variable dialog box consists of a Name field, a Data Type selection drop-down and a Set Default Value(s) link which can be used to specify default variable values.

Figure 1 IBM Cognos Report Studio displaying the Active Report Variable dialog box



3. Within the name field of the Active Report Variable dialog box, add the name varMyActiveReportVariable.
4. Click the Set Default Value(s) link to display the Default Variable Values dialog box.
5. Within the Default Variable Values dialog box, click the New icon at the bottom left of the dialog box.
6. Enter a default value of MyVariableValue and click the OK button.
7. Click the OK button to close the Active Report Variable dialog box.
8. From the available Toolbox items, locate the Variable Text item and drag it into the report. Since there is only one IBM Cognos Active Report variable defined, the Variable Text Item is automatically associated to this variable. If multiple variables have defined, the report author will be prompted to pick a variable.

If the IBM Cognos Active Report is executed it will display the text MyVariableValue for the varMyActiveReportVariable Variable Text Item.

Row Number

The Row Number is used to ensure that the row number in a list is properly displayed as it is dynamically filtered by controls. By including the Row Number object in a list column, the rows will always be numbered sequentially beginning at one as the list is manipulated.

Deck

A Deck provides the report author the ability to manually create the desired number of cards. Decks are useful when the content displayed on the cards differ from card to card.

Deck Item Step by Step

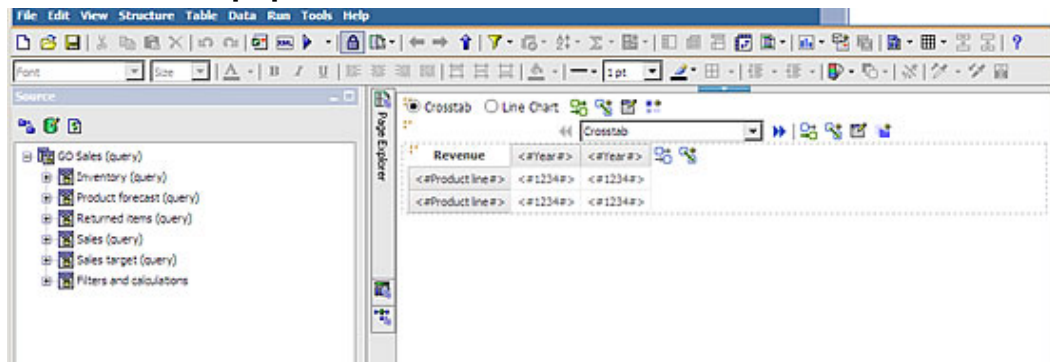
The following example provides the step by step instructions on how to use a Deck item that is controlled by a Radio Button Group to display the same data in a crosstab and a chart.

1. Within IBM Cognos Report Studio, create a new Blank Active Report.

2. From the available Toolbox items, drag the Radio Button Group object onto the report canvas.
3. Click on the Radio Buttons Definition icon located to the right of the Radio Button Group object.
4. Within the Radio Buttons Definition dialog box, delete Button Label 3 by clicking the X that appears when you hover to the left of the entry.
5. Rename Button Label 1 to Crosstab and Button Label 2 to Line Chart.
6. Click the OK button to return to the report page.
7. Click on the Radio Button Group and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Crosstab/Chart Radio Control.
8. From the available toolbox items, locate the Deck item and drag it underneath the Radio Button Group control.
9. Click on the Edit Deck Cards Definition icon located to the right of the Deck item.
10. Within the Deck Cards Definition dialog box, delete Card 3 by clicking the X.
11. Rename Card 1 to Crosstab and Card 2 to Line Chart.
12. Click the OK button to return to the report page.
13. Click on the Deck and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Crosstab/Chart Deck.
14. From the available Toolbox items, drag the Crosstab object onto the Crosstab card.
15. Using the available Source items, populate the Crosstab object with the GO Sales(query)\Sales(query)\Products\Product line on the rows, the GO Sales(query)\Sales(query)\Time\Year as the columns and GO Sales(query)\Sales(query)\Sales\Revenue as the measure. Once completed, the report page should now consist of two radio buttons at the top of the screen that are labelled Crosstab and Line Chart. Within the Deck, one of the cards is labelled Crosstab. The Crosstab card contains a Crosstab object that has been populated with Product line on the rows, Year on the columns and Revenue as the measure. This is also depicted

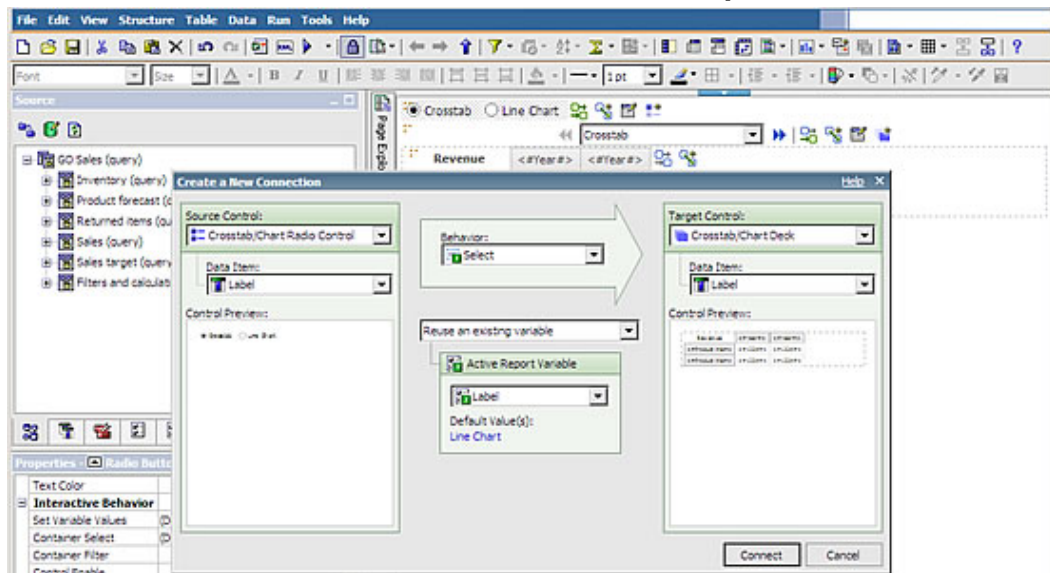
by the image below.

Figure 2 IBM Cognos Report Studio displaying a Deck with the Crosstab card populated



16. Select the Line Chart card from the Deck drop down.
17. From the available Toolbox items, drag the Chart object onto the Line Chart card.
18. Within the Insert Chart dialog box, select line chart and press the OK button.
19. Using the available source items, populate the Line Chart object with the GO Sales(query)\Sales(query)\Products\Product line on the Series, the GO Sales(query)\Sales(query)\Time\Year as the Categories and GO Sales(query)\Sales(query)\Sales\Revenue as the measure.
20. Click the Create a New Connection icon to the right of the Radio Button Group control.
21. Within the Create a New Connection dialog box ensure the Source is the Crosstab/Chart Radio Control and the Target Control is the Crosstab/Chart Deck. The Active Report Variable should be the Label with a Default Value of the Line Chart.

Figure 3 IBM Cognos Active Report Connection dialog displaying the connection between the Radio Button Group and the Deck



22. Click the Connect button to make the connection and return to the report page.

If the IBM Cognos Active Report is executed, it will display two radio buttons. One named Crosstab and the other named Line Chart. By default the user is presented with the Line Chart. The user then has the ability to switch the view to a crosstab by selecting the Crosstab radio button.

Data Deck

The Data Deck object is used to automatically create a card for each data item value used to drive the Data Deck. Data Decks are useful if the number of cards is unknown due to changing data. Data Decks are generally used to display the same report data container for different contexts.

Data Deck Item Step by Step

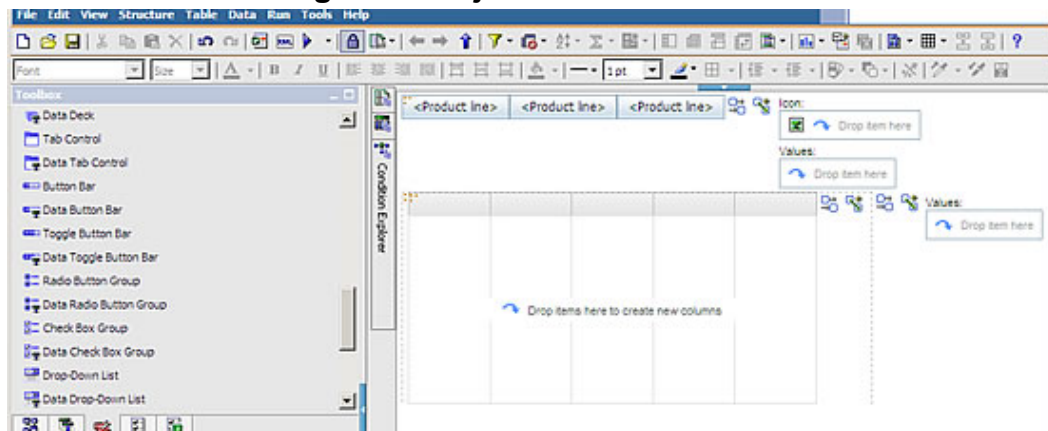
The following example provides the step by step instructions on how to use a Data Deck item that is controlled by a Button Bar to display a list for each product line.

1. Within IBM Cognos Report Studio, create a new Blank Active Report.
2. From the available Toolbox items, drag the Data Button Bar object onto the report canvas.

3. Click on the Data Button Bar and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Product line Data Button Bar.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Data Button Bar/Deck Query.
5. Using the Page Explorer tab, return to the report view by clicking on Page1.
6. From the available Source items, locate the GO Sales(query)\Sales(query)\Products\Product line and drag it into Labels section of the Data Button bar.
7. From the available Toolbox items, hold the right mouse button and drag the Data Deck object onto the report canvas.
8. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.
9. When prompted for a query, select Data Button Bar/Deck Query and press the OK button.
10. Click on the Data Deck and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Product Line Data Deck.
11. From the available Toolbox items, locate the List query object and drag it into the Data Deck.
12. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to List Query.
13. Using the Page Explorer tab, return to the report view by clicking on Page1.

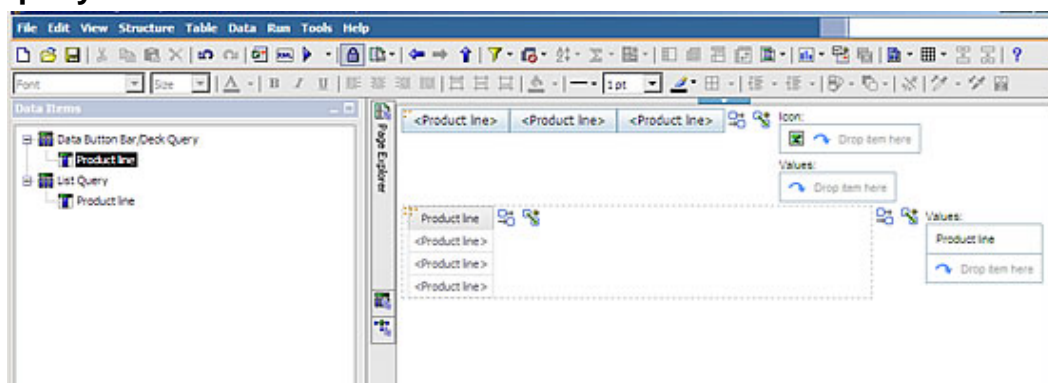
After completing this step, the IBM Cognos Active Report should consist of a Data Button Bar at the top of the screen with the Product line query item inserted into the Labels drop area. Underneath the Data Button Bar, a Data Deck was inserted within which an empty List object was inserted. This is also illustrated by the following screen capture.

Figure 4 The IBM Cognos Active Report with a Data Button Bar and Data Deck containing a List object



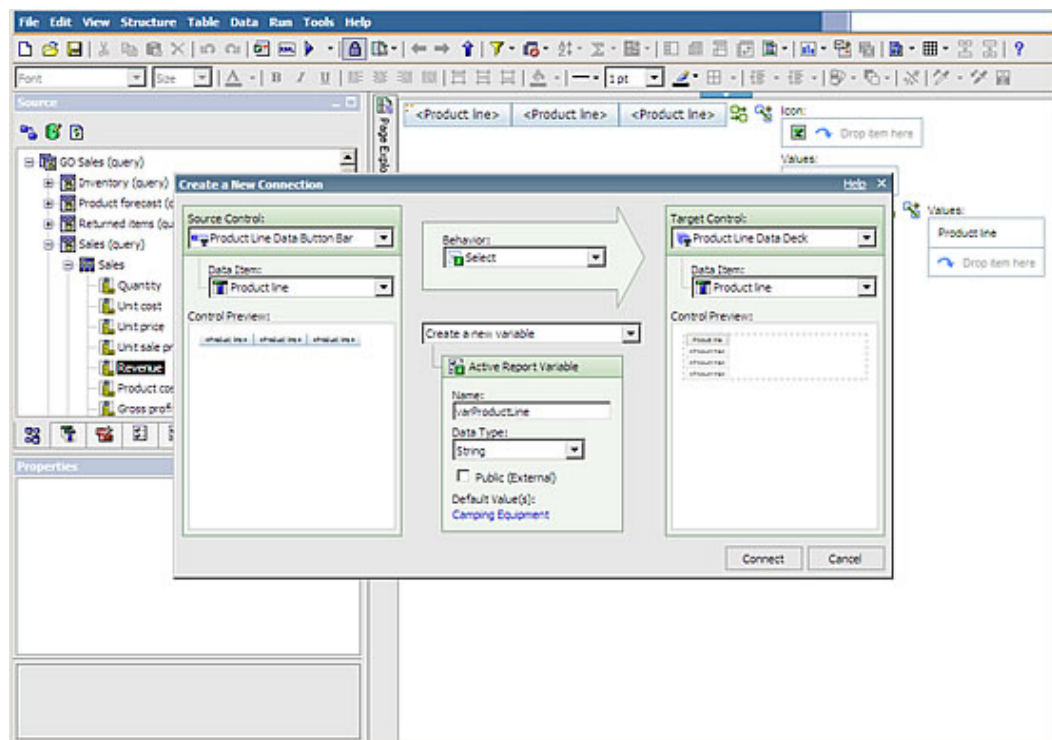
14. From the available Source items, locate the GO Sales(query)\Sales(query)\Products\Product line and drag it into the List object.
15. Within the Data Item tab, select the Product line data item and drag it into the Values drop zone of the Data Deck. After completing this step, the IBM Cognos Active Report should consist of a Data Button Bar at the top of the screen with the Product line query item inserted into the Labels drop area. Underneath the Data Button Bar, a Data Deck now contains a List object populated with the Product line query item. The Product line query item was also used to populate the Values drop zone of the Data Deck. The current report layout is illustrated by the following screen capture.

Figure 5 The IBM Cognos Active Report with a Data Button Bar and Data Deck containing a List object populated with the Product line query item



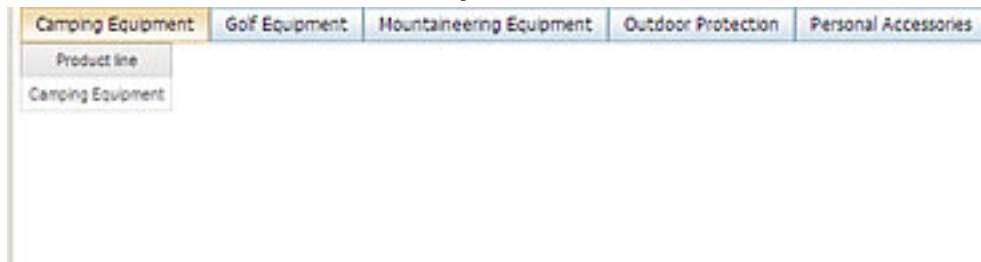
16. Select the List object and within the left hand Properties pane under the Data section, select the Master Detail Relationships property by clicking the ellipsis.
17. Within the Master Detail Relationships dialog box, define a relationship between the Data Button Bar/Deck Query and the List Query by clicking the New Link.
18. Click the OK button to commit the relationship and return back to the report page.
19. Select the Data Button Bar object and right click to display the available menu.
20. From the available menu select Create a New Connection.
21. Within the Create a New Connection dialog box, ensure that the Source Control is the Product Line Data Button Bar, the Target Control is the Product Line Data Deck and the Active Report Variable section has a variable defined with the name varProductLine, a data type of String and a default value of Camping Equipment. The completed dialog box is also illustrated by the following screen capture.

Figure 6 Create a New Connection dialog box linking the Data Button Bar to the Data Deck



22. Click the Connect button to create the connection.
If the IBM Cognos Active Report is executed, it will display a button for each of the product lines at the top of the report. Each button will display a List that has been filtered to the appropriate product line when pressed. This is also illustrated by the following image.

Figure 7 IBM Cognos Active Report output showing a single record list with the same data as the pressed button



Tab Control

A Tab Control provides the report author the ability to manually create the desired number of Tabs.

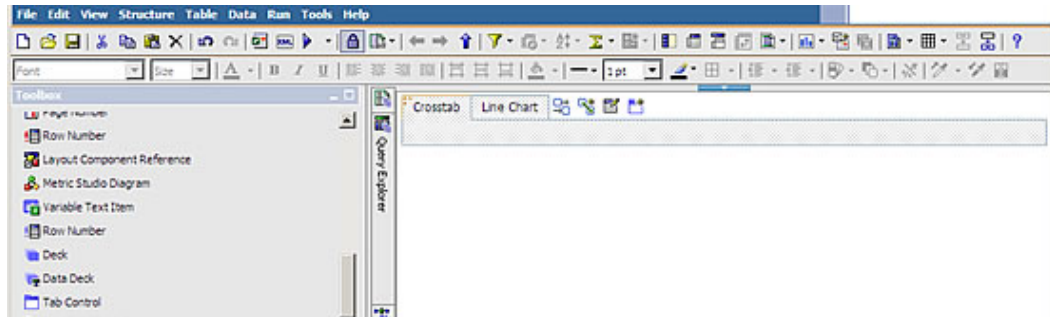
Tab Control Item Step by Step

The following example provides the step by step instructions on how to use a Tab Control to display either a crosstab or chart view of the same data.

1. Within IBM Cognos Report Studio, create a new Blank Active Report.
2. From the available Toolbox items, drag the Tab Control object onto the report canvas.
3. Click on the Tab Control and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Crosstab/Chart Tab Control.
4. Click on the Tab Definition Icon located to the right of the physical tabs.
5. Delete Tab label 3 by hovering the mouse over it and clicking the X.
6. Rename Tab label 1 to Crosstab and Tab label 2 to Line Chart.
7. Press the OK button to return to the report page. When completed the report page should now display two tabs at the top of the screen. The first

tab should be labelled Crosstab and the second Line Chart. This is also illustrated by the following screen capture.

Figure 8 IBM Cognos Report Studio displaying the IBM Cognos Active Report Tab Control



8. From the available Toolbox items, drag the Crosstab object onto the Crosstab tab.
9. Using the available source items, populate the Crosstab object with the GO Sales(query)\Sales(query)\Products\Product line on the rows, the GO Sales(query)\Sales(query)\Time\Year as the columns and GO Sales(query)\Sales(query)\Sales\Revenue as the measure.
10. Click on the Line Chart tab.
11. From the available Toolbox items, drag the Chart object on the Line Chart tab.
12. Within the Insert Chart dialog box, select Line chart and press the OK button.
13. Using the available source items, populate the Line Chart object with the GO Sales(query)\Sales(query)\Products\Product line on the Series, the GO Sales(query)\Sales(query)\Time\Year as the Categories and GO Sales(query)\Sales(query)\Sales\Revenue as the measure.
If the IBM Cognos Active Report is executed, it will display two tabs. One named Crosstab and the other named Line Chart. By default the user is presented with the Line Chart. The user then has the ability to switch the view to a crosstab by clicking on the Crosstab tab.

Data Tab Control

A Data Tab Control provides the report author the ability to create Tabs based on the number of records returned by a data item. A Data Tab Control can be effective when the number of tabs required needs to change when the record set of a data item changes.

Button Bar

A Button Bar provides the report author the ability to manually create the desired number of buttons.

Data Button Bar

A Data Button Bar provides the report author the ability to create buttons based on the number of records returned by a data item. A Data Button Bar can be effective when the number of buttons required needs to change when the record set of a data item changes.

Toggle Button Bar

A Toggle Button Bar provides the report author the ability to display manually created selectable buttons. These buttons can be used to dynamically filter a data container.

Data Toggle Button Bar

A Data Toggle Button Bar provides the report author the ability to display multiple selectable buttons based on the number of records returned by a data item.

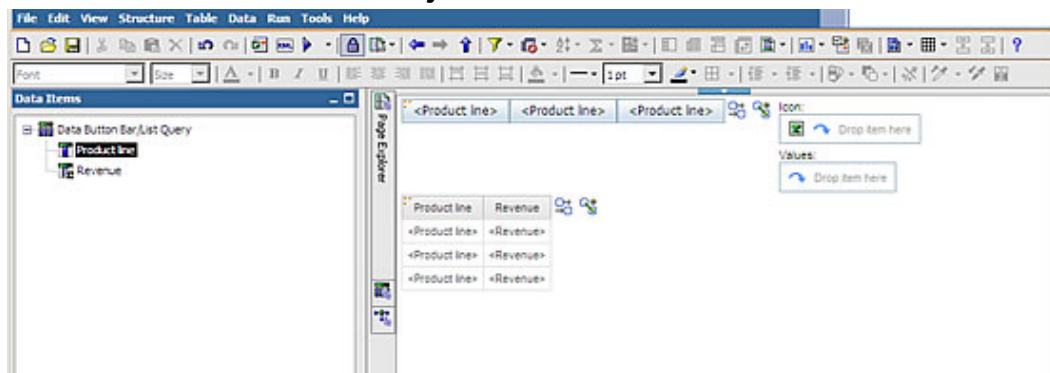
Data Toggle Button Bar Step by Step

The following example provides the step by step instructions on how to use a Data Toggle Button Bar to dynamically filter a list object based on the selected buttons of the Data Toggle Button Bar.

1. Within IBM Cognos Report Studio, create a new Blank Active Report.
2. From the available Toolbox items, drag the Data Toggle Button Bar object onto the report canvas.
3. Click on the Data Toggle Button Bar and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine List ToggleButtonBar.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Data Button Bar/List Query.
5. Using the Page Explorer tab, return to the report view by clicking on Page1.

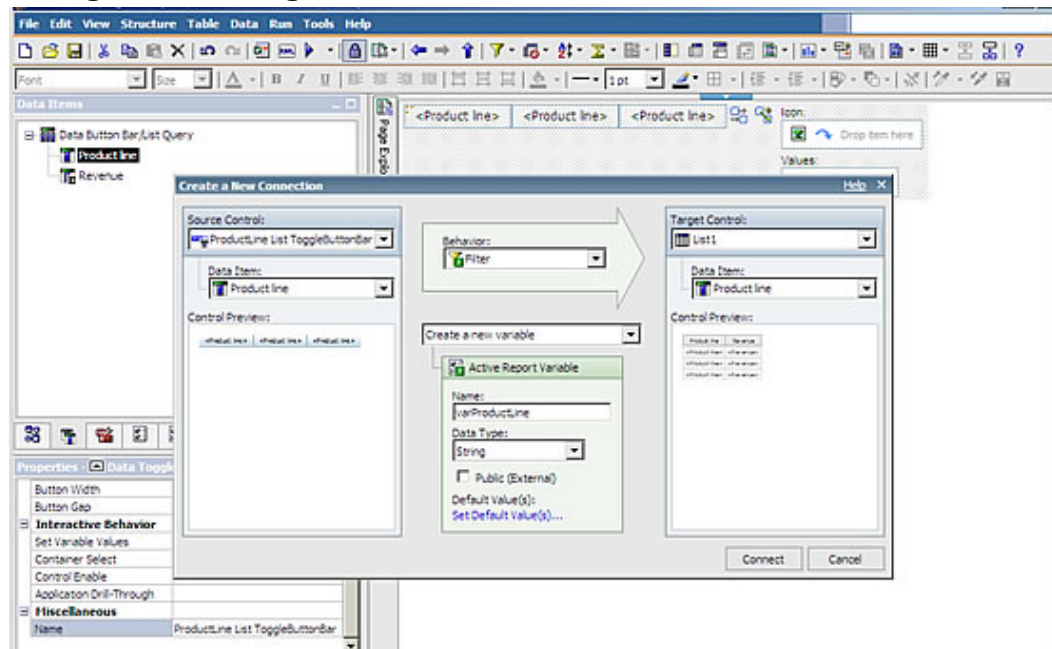
6. From the available Toolbox items, right click and drag the List object onto the report canvas below the Data Toggle Button Bar.
7. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.
8. When prompted for a query, select Data Button Bar/List Query and press the OK button.
9. Using the available source items, populate the List object with GO Sales(query)\Sales(query)\Products\Product line and GO Sales(query)\Sales(query)\Sales\Revenue.
10. From the available Data Items drag Product line into the Labels drop zone of the Data Toggle Button Bar. When completed, the IBM Cognos Active Report should have a Data Toggle Button Bar populated with Product line. Underneath the Data Toggle Button Bar a List has been populated with Product line and Revenue. This is also illustrated by the following screen capture.

Figure 9 IBM Cognos Report Studio displaying the Data Toggle Button Bar and List data object



11. Click the Create a New Connection icon to the right of the Toggle Button Bar control.
12. Within the Create a New Connection dialog box ensure the Source is the ProductLine List ToggleButtonBar and the Target Control is List1. The Behavior drop down list was changed from Select to Filter and an IBM Cognos Active Report variable name varProductLine was created. The varProductLine also has the default value of 'Camping Equipment', 'Golf Equipment' and 'Mountaineering Equipment' set. This is illustrated by the following screen capture.

Figure 10 IBM Cognos Active Report Create a New Connection dialog box creating the connection between the control and the list



13. Click the Connect button to create the connection.

If the IBM Cognos Active Report is executed, it will display a button for each of the product lines at the top of the report. As each button is clicked, the List object refreshes including only the product lines whose buttons have been selected. In the following example, the user has selected the Camping Equipment and Golf Equipment buttons. The list therefore only displays those two product lines and their associated revenue.

Figure 11 IBM Cognos Viewer output displaying the Toggle Button Bar with two values selected

Camping Equipment	Golf Equipment	Mountaineering Equipment	Outdoor Protection	Personal Accessories
Product line	Revenue			
Camping Equipment	\$1,589,036,664.03			
Golf Equipment	\$726,411,367.89			

Radio Button Group

A Radio Button Group provides the report author the ability to manually supply the available selections displayed as a radio button choice. These values can be used to filter or select the data of a data container one radio button value at a time.

Data Radio Button Group

A Data Radio Button Group provides the report author the ability to supply the available selections as a radio button choice based on the record set returned by a specified data item. These values can be used to filter or select the data of a data container one radio button value at a time.

Check Box Group

A Check Box Group provides the report author the ability to manually supply the available selections displayed as check boxes. The items selected in check boxes can be used to filter the data of a data container.

Data Check Box Group

A Data Check Box Group provides the report author the ability to display multiple selectable check boxes based on the number of records returned by a data item. These check boxes can be selected in multiples and used to dynamically filter a data container.

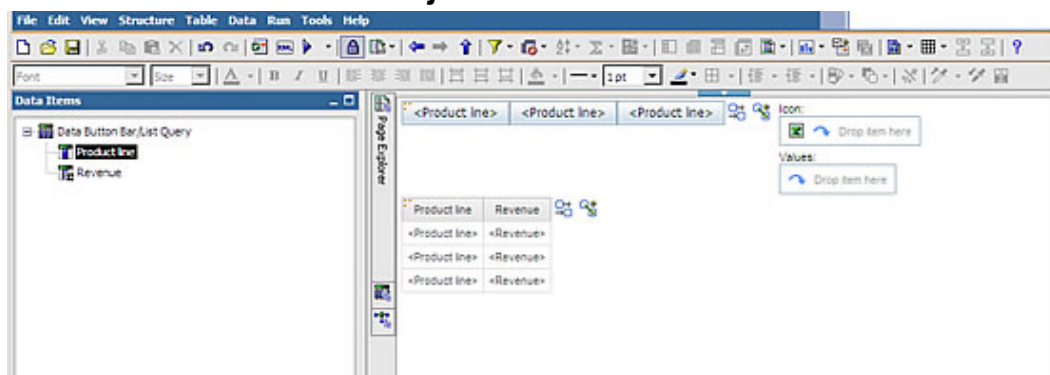
Data Check Box Group Step by Step

The following example provides the step by step instructions on how to use the Convert Control menu option to convert the previous Data Toggle Button Bar example into a Data Check Box Group which then dynamically filters a list object based on which check boxes are selected.

1. Within IBM Cognos Report Studio, create a new Blank Active Report.
2. From the available Toolbox items, drag the Data Toggle Button Bar object onto the report canvas.
3. Click on the Data Toggle Button Bar and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine List ToggleButtonBar.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Data ToggleButtonBar/List Query.
5. From the available Toolbox items, hold the right mouse button and drag the List object onto the report canvas.
6. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.

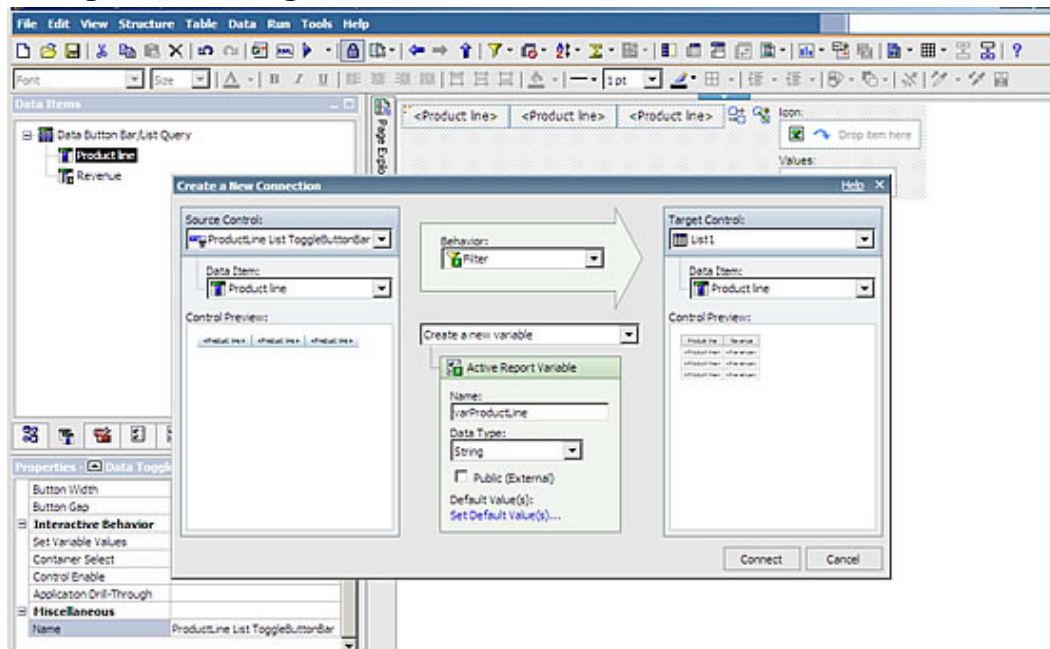
7. When prompted for a query, select ProductLine List ToggleButtonBar Query and press the OK button.
8. Using the available source items, populate the List object with the GO Sales(query)\Sales(query)\Products\Product line and GO Sales(query)\Sales(query)\Sales\Revenue.
9. From the available Data Items drag Product line into the Labels drop zone of the Data Toggle Button Bar. When completed, the IBM Cognos Active Report should have a Data Toggle Button Bar populated with Product line. Underneath the Data Toggle Button Bar a List has been populated with Product line and Revenue. This is also illustrated by the following screen capture.

Figure 12 IBM Cognos Report Studio displaying the Data Toggle Button Bar and List data object



10. Click the Create a New Connection icon to the right of the Toggle Button Bar control.
11. Within the Create a New Connection dialog box ensure the Source is the ProductLine List ToggleButtonBar and the Target Control is List1. The Behavior drop down list was changed from Select to Filter and an IBM Cognos Active Report variable name varProductLine was created. The varProductLine also has the default value of 'Camping Equipment', 'Golf Equipment' and 'Mountaineering Equipment' set. This is illustrated by the following screen capture.

Figure 13 IBM Cognos Active Report Create a New Connection dialog box creating the connection between the control and the list



12. Click the Connect button to create the connection.
13. Select the Data Toggle Button Bar control and right click. From the available menu items select Convert Control.
14. From the available list, select Data Check Box Group.
15. Select the Data Check Box Group and within the bottom left hand side Properties pane under the Miscellaneous section, change the Name property from ProductLine List ToggleButtonBar to ProductLine List DataCheckBoxGroup.

If the IBM Cognos Active Report is executed, it will display a check box for each of the product lines at the top of the report. As each check box is selected, the List object refreshes to include only the product lines whose check boxes have been selected. In the following example, the user has selected the Camping Equipment and Golf Equipment check boxes. The list therefore only displays those two product lines and their associated revenue.

Figure 14 IBM Cognos Viewer output displaying the Check Box Group with two values selected

The screenshot shows a user interface with a Check Box Group at the top and a table below it. The Check Box Group contains five items: 'Camping Equipment' (checked), 'Golf Equipment' (checked), 'Mountaineering Equipment' (unchecked), 'Outdoor Protection' (unchecked), and 'Personal Accessories' (unchecked). Below the checkboxes is a table with two columns: 'Product line' and 'Revenue'.

Product line	Revenue
Camping Equipment	\$1,589,036,664.03
Golf Equipment	\$726,411,367.89

Drop-Down List

A Drop-Down List provides the report author the ability to manually supply the available selections displayed in a drop down list. The items selected in the Drop-Down List can be used to dynamically filter or select a data container.

Data Drop-Down List

A Data Drop-Down List provides the report author the ability to supply the available selections in a drop down list based on the record set returned by a specified data item. The items selected in the Data Drop-Down List can be used to dynamically filter or select a data container.

List Box

A List Box provides the report author the ability to manually supply the available selections displayed in a List Box. The items selected in the List Box can be used to dynamically filter or select a data container one value at a time. Multi-select can also be enabled by setting the Multi-Select property to Yes.

Data List Box

A Data List Box provides the report author the ability to supply the available selections in a drop down list based on the record set returned by a specified data item. The items selected in the Data List Box can be used to dynamically filter or select a data container one value at a time. Multi-select can also be enabled by setting the Multi-Select property to Yes.

Iterator

A static Iterator is a control that allows users to navigate through values by using buttons such as first, last, previous and next. The control provides the report author the ability to manually supply the available selections. When connected to a variable it will allow the iterator control to filter or select values from a data container.

Data Iterator

A Data Iterator is a control that allows users to navigate through values by using buttons such as first, last, previous and next. The control provides the report author the ability to supply the available values based on the record set returned by a specified data item. When connected to a variable it will allow the iterator control to filter or select values from a data container.

Data Iterator Step by Step

The following example provides the step by step instructions on how to use a Data Iterator to dynamically select values from a deck.

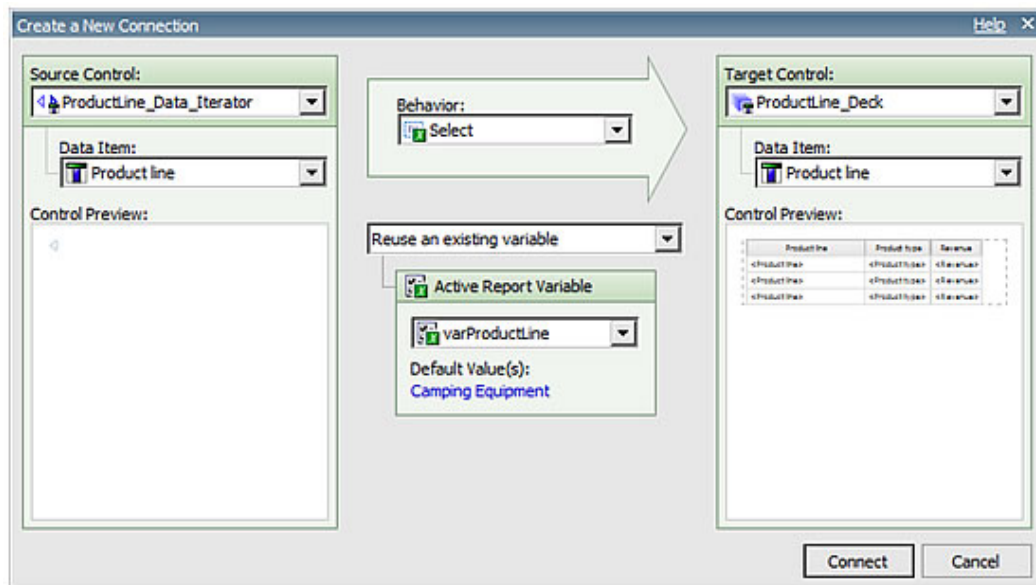
1. Within IBM Cognos Report Studio, create a new Blank Active Report.
2. From the available Toolbox items, drag the Table object onto the report canvas.
3. On the Insert Table dialog box set the Number of columns to 3 and Number of rows to 1 and then click the OK button.
4. From the available Toolbox items, drag the Data Iterator object onto the report canvas and place it in the first cell of the table.
5. Click on the Data Iterator and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine_Data_Iterator.
6. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Iterator_Deck_Query.
7. Using the Page Explorer tab, return to the report view by clicking on Page1.
8. From the available Toolbox items, hold the right mouse button and drag the Data Deck object onto the report canvas and place the Data Deck in the middle cell of the table.
9. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.
10. When prompted for a query, select Iterator_Deck_Query and press the OK button.
11. Click on the Data Deck and within the bottom left hand Properties pane

change the Name property within the Miscellaneous section to ProductLine_Deck.

12. Using the available Source items, populate the ProductLine_Data_Iterator Label drop zone with the GO Sales(query)\Sales(query)\Products\Product line.
13. From the available Data Items drag Product line from the Iterator_Deck_Query into the Values drop zone of the Data deck named ProductLine_Deck.
14. From the available Toolbox items, locate the List object and drag it into the Data Deck named ProductLine_Deck.
15. From the available Source items, locate the GO Sales(query)\Sales(query)\Products\Product line, GO Sales(query)\Sales(query)\Products\Product type and GO Sales(query)\Sales(query)\Sales\Revenue and drag them into the List object.
16. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to ProductList_Query.
17. Using the Page Explorer tab, return to the report view by clicking on Page1.
18. Select the List object and within the left hand Properties pane, select the Master Detail Relationships property from the Data Section by clicking the ellipsis.
19. Within the Master Detail Relationships dialog box, define a relationship between the Iterator_Deck_Query and the ProductList_Query by clicking the New Link. The Iterator_Deck_Query \ Product line data item should be linked to ProductList_Query \ Product line data item.
20. Click the OK button to commit the relationship and return back to the report page.
21. Click the Create a New Connection icon to the right of the Data Iterator named ProductLine_Data_Iterator.
22. Within the Create a New Connection dialog box ensure the Source is the ProductLine_Data_Iterator and the Target Control is ProductLine_Deck. The Behavior drop down list is set to the default of Select and the IBM Cognos Active Report variable name varProductLine was created. The varProductLine also has the default value of 'Camping Equipment' set.

This is illustrated by the following screen capture.

Figure 15 IBM Cognos Report Studio displaying the Data Iterator and List data object



23. Click the Connect button to create the connection.
24. Select the ProductLine_Data_Iterator in the left hand table cell, right click to display the context menu and choose Copy to place into the paste buffer.
25. Select the far right cell of the table, right click to display the context menu and select Paste to add the Data Iterator to the cell.
26. Select the newly copied Data Iterator named ProductLine_Data_Iterator1.
27. Within the bottom left hand Properties pane, locate the General section and set:

```

Iterator First to Hide
Iterator Previous to Hide
Iterator Label Area to Hide
Iterator Next to Show
Iterator Last to Hide
  
```

28. Return to the left hand table cell and select the Data Iterator named ProductLine_Data_Iterator.

29. Within the bottom left hand Properties pane, locate the General section and set:

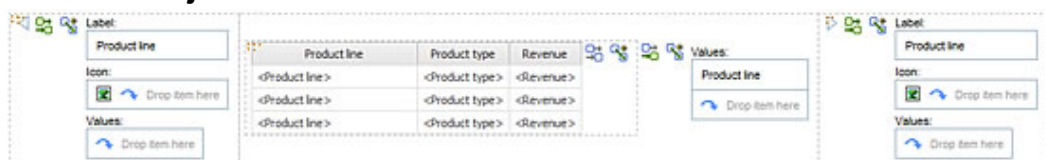
```

Iterator First to Hide
Iterator Previous to Show
Iterator Label Area to Hide
Iterator Next to Hide
Iterator Last to Hide

```

30. The completed layout is illustrated by the following screen capture.

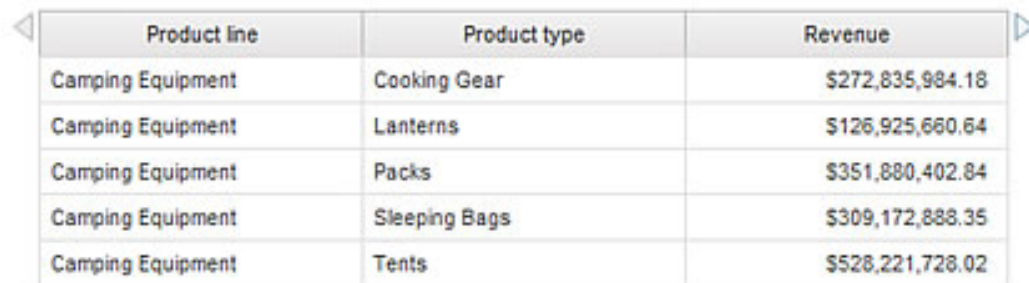
Figure 16 IBM Cognos Report Studio displaying the Data Iterators, List data object within a Data Deck



31. The last few steps are layout clean up steps to make the Active Report more appealing and complete. Select a List column and within the bottom left hand Properties pane, click the triangular Ancestor button and select List Columns.
32. Locate the Positioning section, select the Size and Overflow property and click the ellipsis on the right.
33. In the Size & Overflow dialog box set the Width to 150 pixels.
34. Click OK to save the settings.
35. Click the triangular Ancestor button and select Table.
36. Locate the Positioning section, select the Size and Overflow property and click the ellipsis on the right.
37. In the Size & Overflow dialog box clear all values.
38. Return to the canvas and control click and select all three table cells.
39. Click the Left button on the Toolbar to align objects in the cell to the left.
40. Click the Top button on the Toolbar to align objects in the cell to the top.
41. If the IBM Cognos Active Report is executed, it will display two iterators (one showing only Next and one showing only Previous) on either side of

the List report. As the Iterator buttons are clicked a different card is displayed. In the following example, the user has displayed the first card which has the value of Camping Equipment for the Product line column. Note that since this is the first value, the Prev button is disabled and the Next button is active.

Figure 17 IBM Cognos Active Report output displaying the Data Iterator set to Camping Equipment



Product line	Product type	Revenue
Camping Equipment	Cooking Gear	\$272,835,984.18
Camping Equipment	Lanterns	\$126,925,660.64
Camping Equipment	Packs	\$351,880,402.84
Camping Equipment	Sleeping Bags	\$309,172,888.35
Camping Equipment	Tents	\$528,221,728.02

Discrete Values Slider

A Discrete Values Slider provides the report author a slider which can be used to filter or select a data container based on values defined by the report author. The Discrete Values Slider is best suited for non numeric filtering or the selection of a data container. A Range can also be enabled so that multiple sequential items can be selected at the same time.

Data Discrete Values Slider

A Data Discrete Values Slider provides the report author a slider which can be used to filter or select a data container based on values obtained from a data item. The Data Discrete Values Slider is best suited for non numeric filtering or the selection of a data container. A Range can also be enabled so that multiple sequential items can be selected at the same time.

Data Discrete Values Slider Step by Step

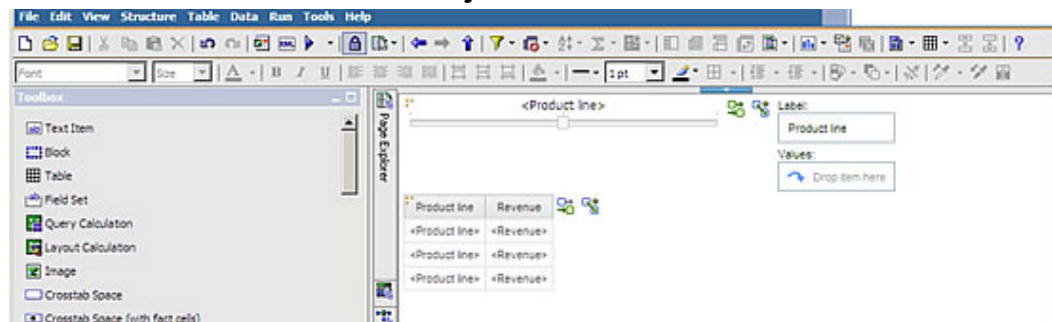
The following example provides the step by step instructions on how to use a Data Discrete Values Slider to dynamically filter a list object based on its selected value.

1. Within IBM Cognos Report Studio, create a new Blank Active Report.
2. From the available Toolbox items, drag the Data Discrete Values Slider object onto the report canvas.
3. Click on the Data Discrete Values Slider and within the bottom left hand

Properties pane change the Name property within the Miscellaneous section to ProductLine List DiscreteValuesSlider.

4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Data Slider/List Query.
5. Using the Page Explorer tab, return to the report view by clicking Page1.
6. From the available Toolbox items, hold the right mouse button and drag the List object onto the report canvas.
7. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.
8. When prompted for a query, select Data Slider/List Query and press the OK button.
9. Using the available Source items, populate the List object with the GO Sales(query)\Sales(query)\Products\Product line and GO Sales(query)\Sales(query)\Sales\Revenue.
10. From the available Data Items drag Product line into the Labels drop zone of the Data Discrete Values Slider. When completed, the IBM Cognos Active Report should have a Data Discrete Values Slider populated with Product line. Underneath the Data Discrete Values slider, a List has been populated with Product line and Revenue. This is also illustrated by the following screen capture.

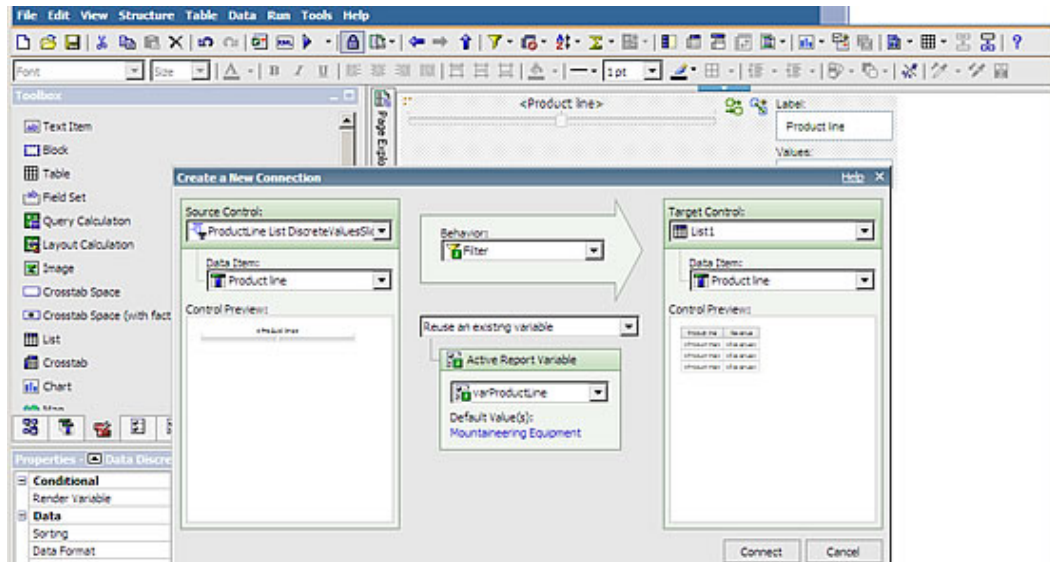
Figure 18 IBM Cognos Report Studio displaying the Data Discrete Values Slider and List data object



11. Click the Create a New Connection icon to the right of the Data Discrete Value Slider.
12. Within the Create a New Connection dialog box ensure the Source is the ProductLine List DiscreteValuesSlider and the Target Control is List1. The

Behavior drop down list was changed from Select to Filter and an IBM Cognos Active Report variable name varProductLine was created. The varProductLine also has the default value of 'Mountaineering Equipment' set. This is illustrated by the following screen capture.

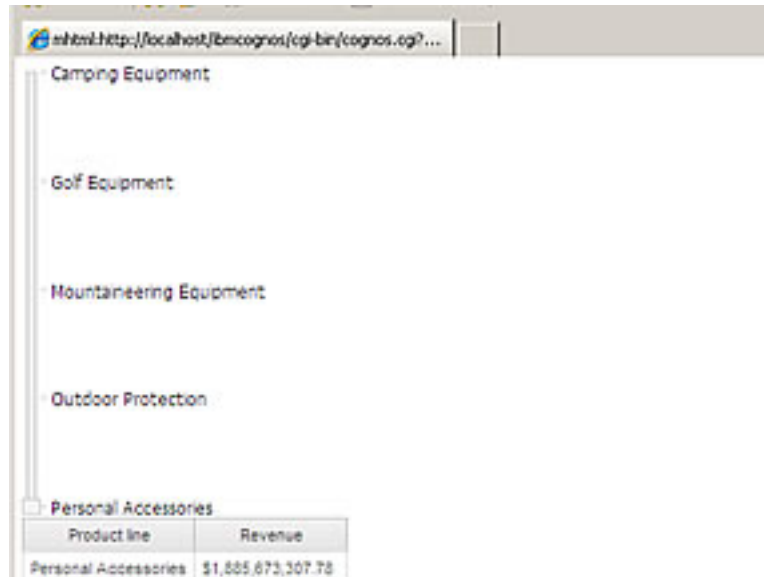
Figure 19 IBM Cognos Active Report Create a New Connection dialog box creating the connection between the control and the list



13. Click the Connect button to create the connection.
14. Select the Data Discrete Values Slider and within the bottom left Properties pane under the General section, change the Orientation property from Horizontal to Vertical.

If the IBM Cognos Active Report is executed, it will display a slider with a value for each of the product lines at the top of the report. Currently, every time the slider is dragged and released the list will update to display the selected product line and its associated revenue. If the Update Variables Live property of the Data Discrete Values Slider is set to Yes, then as the slider is moved, the List object will update without the user having to release the slider. In the following example, the user has placed the slider on the Personal Accessories value. The list therefore only displays that product line and its associated revenue.

Figure 20 IBM Cognos Active Report output displaying the Data Discrete Values slider set to Personal Accessories



The screenshot shows a web browser window with the URL `http://localhost/ibmcognos/cgi-bin/cognos.cgi?...`. The main content area displays a list of product categories: Camping Equipment, Golf Equipment, Mountaineering Equipment, Outdoor Protection, and Personal Accessories. The 'Personal Accessories' category is selected, and a table is displayed below it.

Product line	Revenue
Personal Accessories	\$1,585,673,307.78

Continuous Values Slider

A Continuous Values Slider provides the report author a slider which can be used to filter or select a data container based on manually entered numeric values. The Continuous Values Slider is best suited for numeric range filtering. The range settings can be controlled in the Properties panel when the Continuous Values Slider is selected.

Button

The Button Toolbox item can be used to add additional interactivity to an IBM Active Report. The IBM Cognos Active Report Button can be used to select or filter a container. It can also be used to enable a control or set a variable.

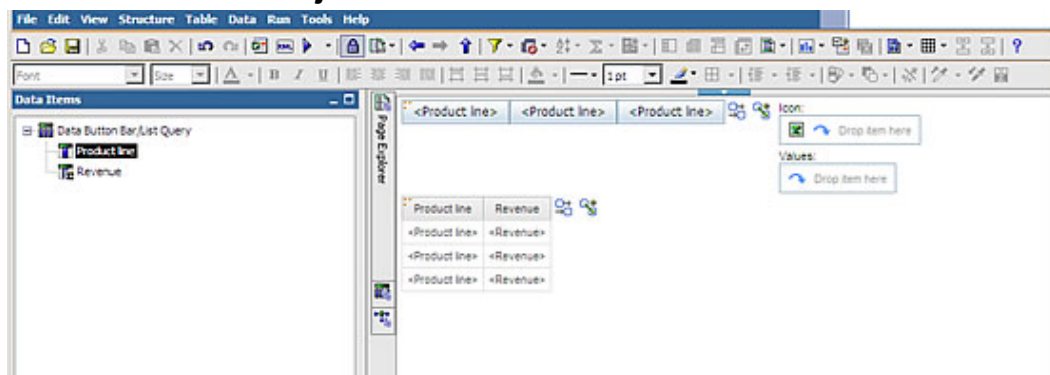
Button Step by Step

The following example provides the step by step instructions on how to use a Data Toggle Button Bar to dynamically filter a list object based on the selected buttons of the Data Toggle Button Bar. It also provides the steps on how to use a button to enable the Data Toggle Button Bar which has been disabled by default.

1. Within IBM Cognos Report studio, create a new Blank Active Report.
2. From the available Toolbox items, drag the Data Toggle Button Bar object onto the report canvas.

3. Click on the Data Toggle Button Bar and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine List ToggleButtonBar.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Data Button Bar\List Query.
5. From the available Toolbox items, hold the right mouse button and drag the List object onto the report canvas.
6. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.
7. When prompted for a query, select Data Button Bar\List Query.
8. Query and press the OK button.
9. Using the available Source items, populate the List object with the GO Sales(query)\Sales(query)\Products\Product line and GO Sales(query)\Sales(query)\Sales\Revenue.
10. From the available Data Items drag Product line into the Labels drop zone of the Data Toggle Button Bar. When completed, the IBM Cognos Active Report should have a Data Toggle Button Bar populated with Product line. Underneath the Data Toggle Button Bar a List has been populated with Product line and Revenue. This is also illustrated by the following screen capture.

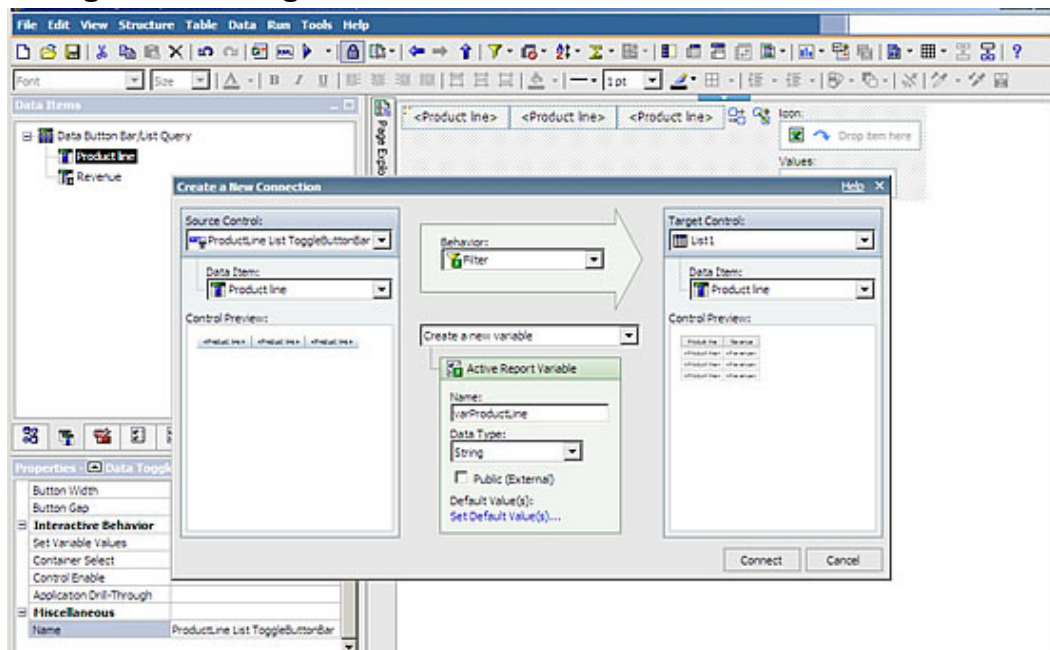
Figure 21 IBM Cognos Report Studio displaying the Toggle Button Bar and List data object



11. Click the Create a New Connection icon to the right of the Data Toggle Button Bar control.

12. Within the Create a New Connection dialog box ensure the Source is the ProductLine List ToggleButtonBar and the Target Control is List1. The Behavior drop down list was changed from Select to Filter and an IBM Cognos Active Report variable name varProductLine was created. The varProductLine was given the default value of the set 'Camping Equipment', 'Golf Equipment' and 'Mountaineering Equipment'. This is illustrated by the following screen capture.

Figure 22 IBM Cognos Active Report Create a New Connection dialog box creating the connection between the control and the list

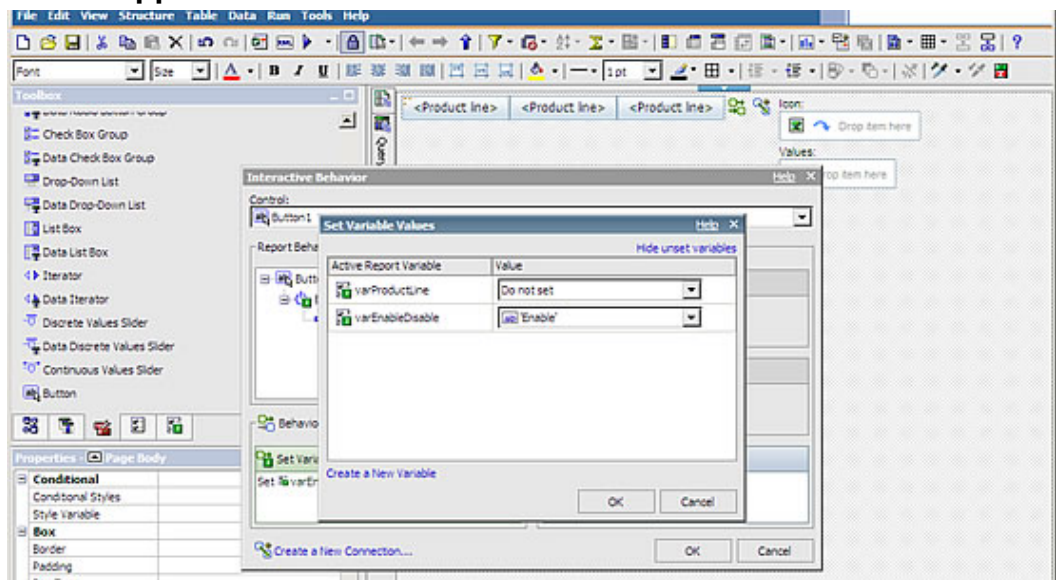


13. Click the Connect button to create the connection.
14. From the available Toolbox items, drag the Button object below the list object.
15. Click on the Button to select it. Within the bottom left of Properties pane, under the General section, change the button Label to Enable IT!.
16. Click on the Interactive Behavior icon to the right of the Button object.
17. Within the Interactive Behavior dialog box, double click the Set Variable Values area.
18. Within the Set Variable Values dialog box, click the Create a New Variable link.

19. Create a new variable named varEnableDisable with a default value of disable.
20. Click OK to return back to the Set Variable Values dialog box.
21. Within the Set Variable values dialog box, leave the varProductLine value as “Do not set” but change the varEnableDisable value to “Enable” by selecting Type in a value.

When completed, the Set Variable Values dialog box should display the varProductLine variable with a value of “Do not set” and the varEnableDisable variable set to the type in value of “Enable”. This is also illustrated by the following screen capture.

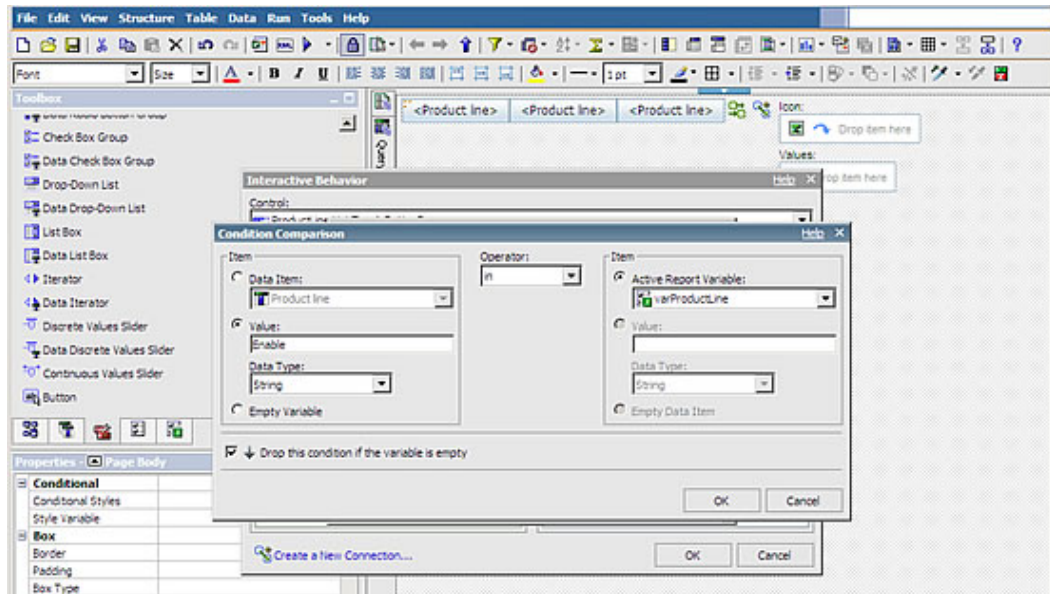
Figure 23 IBM Active Report Set Variable Values dialog box with a value supplied to the varEnableDisable variable



22. Click the OK button to return to the Interactive Behavior dialog box.
23. Click OK again to return to the report layout.
24. Select the Interactive Behavior for the Data Toggle Button Bar.
25. Within the Interactive Behavior dialog box, double click the Control Enable at the bottom right of the screen.
26. In the Condition Enable dialog box, set the left Item to Value and type Enable in the corresponding text field. Set the right Item to Active Report Variable and ensure the variable varEnableDisable has been selected.

The operator drop down should be set to IN. This is also illustrated by the following screen capture.

Figure 24 IBM Cognos Active Report Condition Configuration for enabling the Data Toggle Button Bar



27. Click the OK button three times to return to the report layout.

If the IBM Cognos Active Report is executed, it will display a button for each of the product lines at the top of the report with interactivity disabled. The button to enable the interactivity is displayed below the List object. Once this button is clicked the Data Toggle Button bar becomes active. As each button is clicked, the List object refreshes including only the product lines whose buttons have been selected.

Guidelines to Building an IBM Cognos Active Report

The following sections discuss recommended design practices and guidelines for some of the main areas of IBM Cognos Active Report content creation. Tips and techniques will also be presented in order to help authors implement better reporting applications.

Microsoft Hypertext Archive (MHT) File Size

Once loaded, an IBM Cognos Active Report output will respond instantly to user interactions. Depending on the amount of data packaged into the application and the

number of chart variations, the output file size will vary and the IBM Cognos Active Report load time will be impacted.

IBM Cognos Active Report outputs are self contained so all of the data that is returned by the queries is included in the reports. As the amount of data increases, the MHT file size increases. To help limit the file size increase, there is a configurable property in the IBM Cognos Active Report Properties menu box that allows the author to set the maximum number of rows that a query can return. This property is set to a value of 5,000 by default. This value is by no means a hard limit as it is simply intended to make the IBM Cognos Report author aware when they are including large queries.

When an IBM Cognos Active Report is created, a unique image of every chart variation is created. For example, let's examine a report that contains a data deck driven by 'Products'. The data card contains a line chart of revenue over the last five years and the Master Detail Relationship for the chart is configured to filter the chart based on 'Products'. Therefore, a unique line chart exists for each member of 'Products'. Each of these unique charts is a generated image that is packaged into the MHT output file. As a result, if there are 25 members in 'Products' then there will be 25 images generated and packaged. If 'Products' and 'Countries' drive a deck then there is the number of members in 'Products' times the number of members in 'Countries' unique combinations. An image will be generated for each one of these permutations. The larger the number of unique chart permutations that an author creates, the larger the size the MHT output file will be.

Determining what an acceptable file size is for an IBM Cognos Active Report is a subjective exercise. In applications where users can tolerate a longer load time and the file is shared to all users as a saved output in IBM Cognos Connection or on a network drive then it is not unlikely that a file over 20MB would be acceptable. If users are looking for a high level dashboard for a quick overview of their business while on the go then smaller reports that load faster would be best. In order to build useful reports and ensure a successful deployment, the author must carefully examine the use case and determine the best course of action.

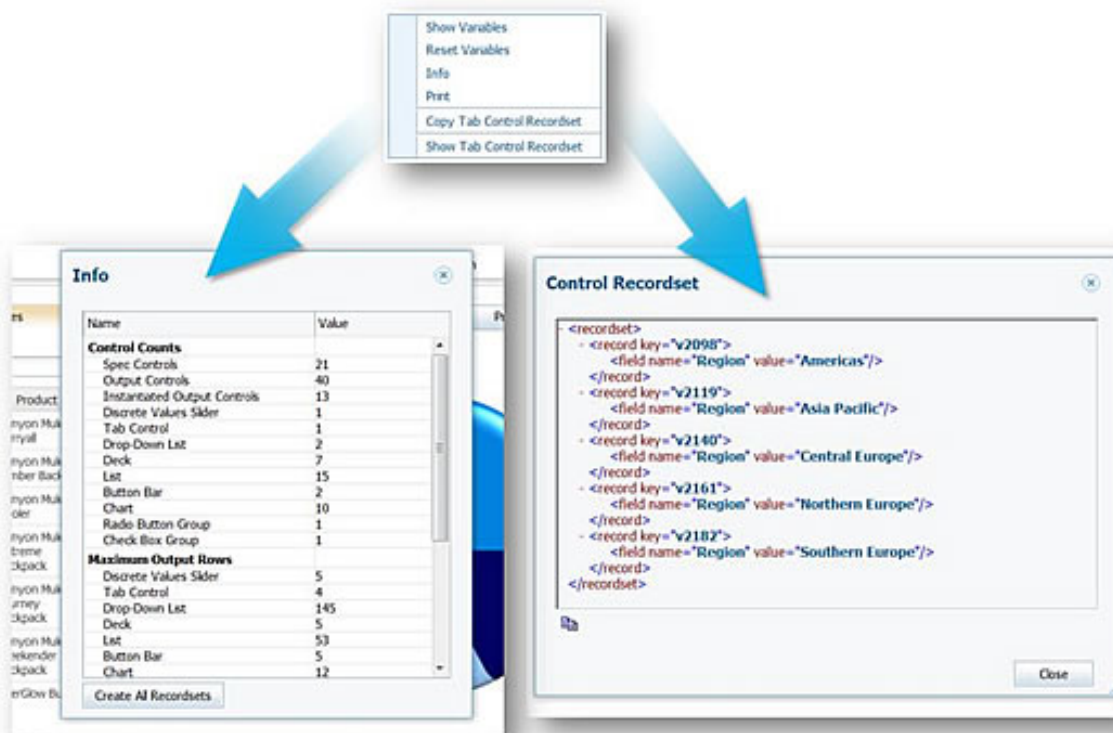
To help keep file sizes to a minimum and thereby improve load time there are several techniques that an author can employ. The following tips and techniques can be applied in many situations.

Query Filtering

IBM Cognos Report authors should filter queries so that they include only the data that the end user is interested in. This is particularly important when a query is driving a data deck in order to avoid creating unnecessary images. Leveraging bursting technology to ensure that only data that is relevant to each user is included in their report is an effective way to manage file size without having to build multiple reports.

There is an advanced debug menu available when running an IBM Cognos Active Report application from IBM Cognos Report Studio. By pressing Control+Shift+D additional options in the right click menu will be enabled. The figure below illustrates the debug menu with the Show Variables, Reset Variables, Info, Print, Copy Tab Control Recordset and Show Tab Control Recordset as available menu options. The figure also illustrates the dialog that would appear by selecting the Info menu option or the Show Tab Control Recordset. The Info dialog box displays the number of records associated with each of the controls within the IBM Cognos Active Report application. The Show Tab Control Records set displays the actual records associated with the control. In this example there is a recordset for each of the regions so a sample record would consist of a field name of Region with a value of "Americas". With this information the IBM Cognos Report author is able to determine how many charts have been created, how many controls are in the report and what records are included in the report. This is a valuable tool for ensuring the queries are filtered properly and no unnecessary data or images are included in the reporting application.

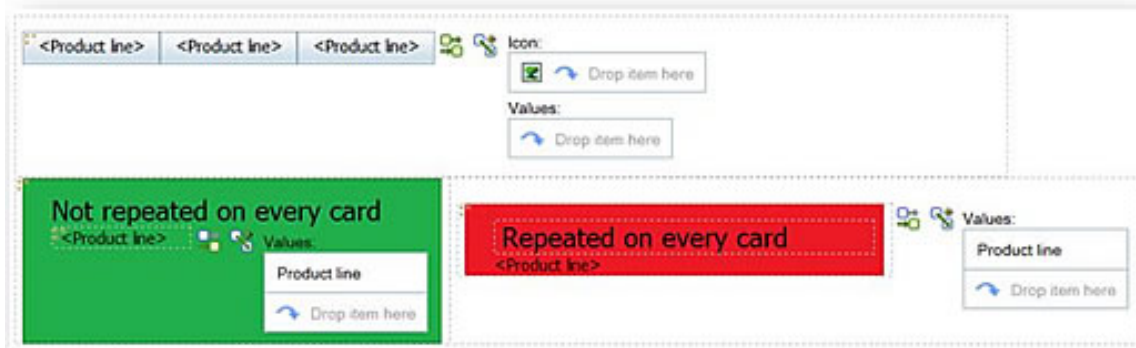
Figure 25 The diagnostic information available from the right click menu



Keep Decks Simple

Decks should only contain data that is unique to a card. Any common styling or static content should be placed outside of the deck in order to avoid it being unnecessarily duplicated. In the image below, the IBM Cognos Active Report application simply consists of a data button bar populated with the Product line query item. This data button bar is used to set a value for a variable which controls the left and right hand data decks, both of which are driven by Product line and contain the Product line query item. The data deck on the left has the formatting correctly applied to the block that contains the data deck. The data deck on the right has the formatting applied to the block that is inside the data deck and will be repeated for each card in the deck. The end result will appear the same to the end user but the output file size will be reduced if the styling is placed outside the deck because the styling is only included once in the output file.

Figure 26 Styling on a deck versus styling on the deck's container



Classes and Layout Component Reference Objects

Using classes is a way to ensure that styling elements are shared between objects. This helps to minimize the output file size. This is particularly true when styling objects in a deck because many copies of the same styling will otherwise be created. By using classes to style, significant improvements in file size have been observed.

Leveraging layout component reference objects has a similar effect to using classes for styling. By using a layout component reference object, a single object is shared throughout the IBM Cognos Active Report application, which in turn, reduces the amount of duplication in the output file. Additionally, design changes can quickly be reflected across multiple objects or reports simply by changing the class or layout component reference object.

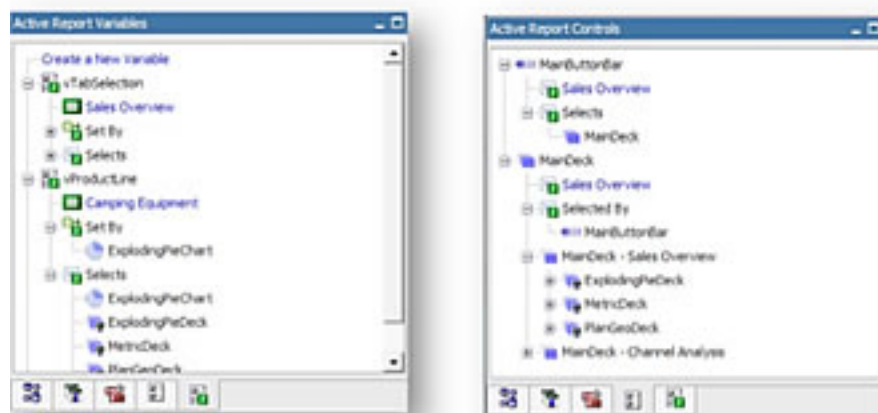
Simplifying the Authoring Experience

As reports become more complex, it is important to maintain an understanding of the overall interaction model and the relationships that exist between the controls and the variables. An author will find the following tips useful as they begin to create advanced reporting applications.

The Active Report Variables and Active Report Controls Tabs

The image below illustrates the dialog boxes presented by selecting the tabs beside the toolbox icon in IBM Cognos Report Studio. The dialog box on the left hand side displays the Active Report Variables and the right hand side displays the Active Report Controls. The Active Report Variables tab shows the author all of the variables that have been created and allows the author to change the name of a variable, change default values and see what controls interact with each of the variables. The Active Report Controls tab complements the variable pane by showing which variables each control is set by and which variables each control sets. This information can also be accessed on a per control basis by hovering over a control's interactive behaviour icon on the report canvas. This is very useful information for the author as they are trying to debug functionality or understand the interaction in a reporting application.

Figure 27 The interactivity information that is shown in the Active Report Variables and the Active Report Controls tab

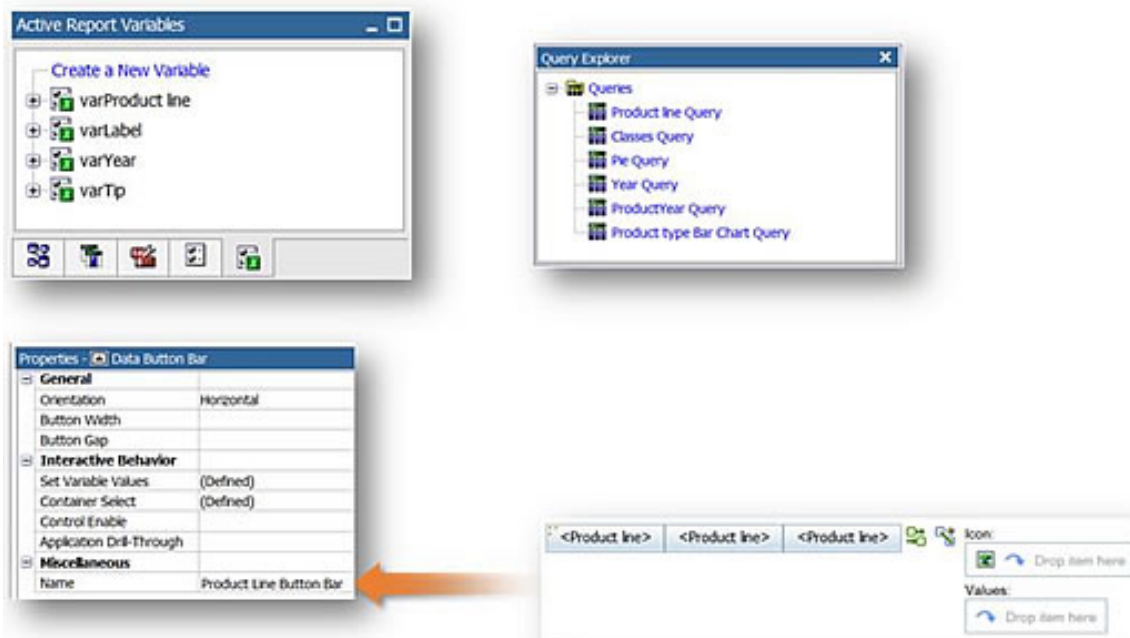


Diligent Naming

As more functionality gets added to an IBM Cognos Active Report application, default control, query and variable names become less meaningful. In order to

ensure that the proper controls are being connected with the correct variable when setting up interactive behaviour, everything should be given meaningful names. It is particularly useful to prefix all variable names with v or var so that they can easily be identified as variables. This practice will help ensure that the author can easily maintain and update the report moving forward. Giving meaningful names also makes it much easier to navigate helpful menus such as the IBM Cognos Active Report Variables panel and Query Explorer. The following image consists of three parts: the IBM Cognos Active Report Variable dialog box which displays a list of variable names that have been properly named with the var prefix, the Query Explorer dialog box, which displays a list of query objects appropriately named to allow for easy association to the report object that uses them and the IBM Cognos Report Studio properties pane. The IBM Cognos Report Studio properties pane illustrates that the Data Button Bar object has been appropriately named Product Line Button Bar under the Miscellaneous\Name property.

Figure 28 Variables, queries and controls with meaningful names



Reusing Queries

When authoring an IBM Cognos Active Report, a new query is created every time an object is dragged into the report. As a result, the number of queries in the report increases quickly and it becomes difficult to ensure that all queries are filtered and implemented properly. This situation can be simplified by reusing the same query for multiple controls that share the same information. A simple way to accomplish this is

to use a right-click and drag when adding a new control to the canvas. The author will then be prompted to associate this control with an existing query instead of having a new query created.

Default Variables

Where applicable, all variables should be assigned default values. This will ensure that when the reporting application is loaded the end user will be shown the proper data with the desired context.

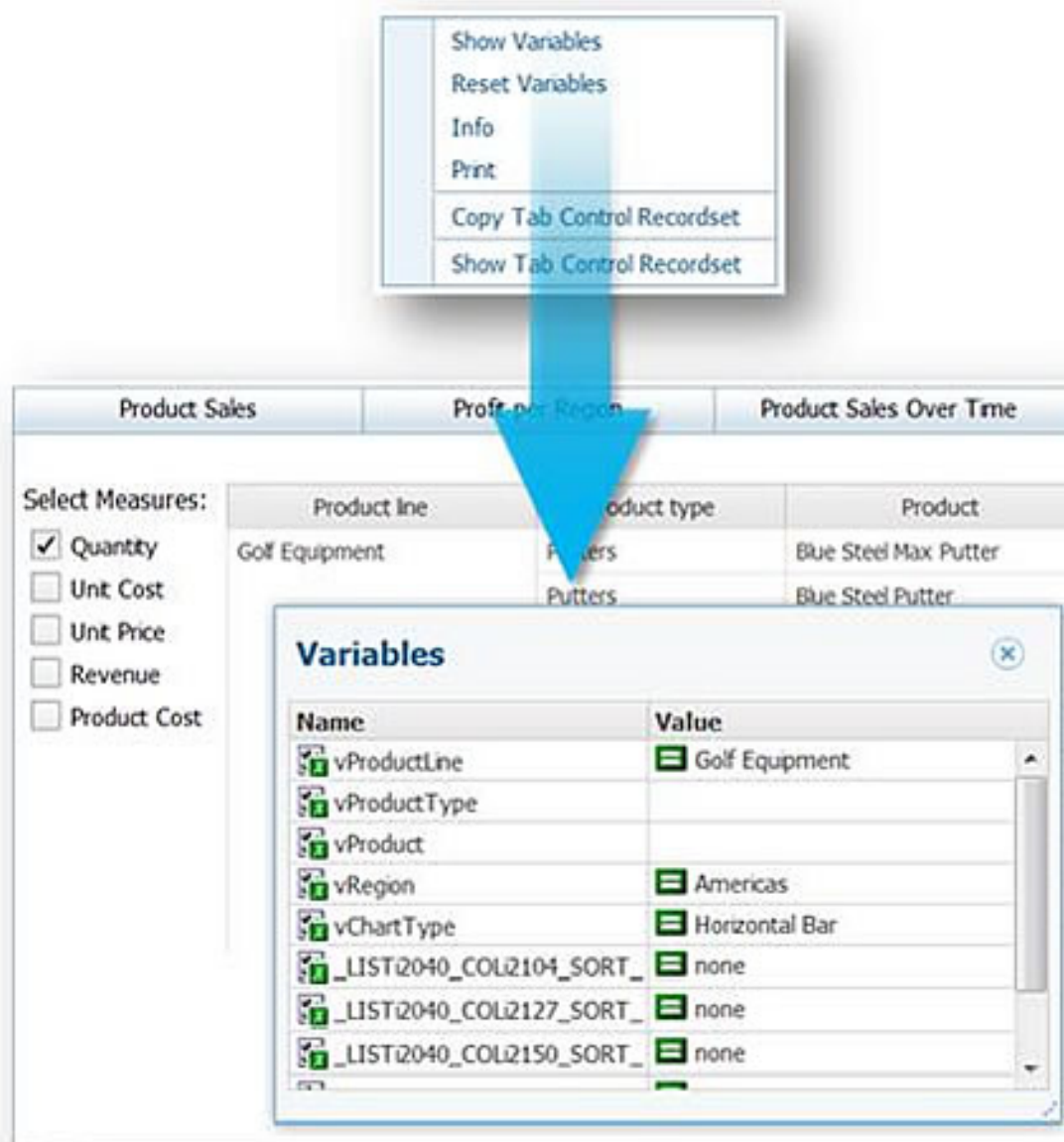
Nesting Data Containers

To simplify the interactive behavior logic, an author should avoid nesting a data container inside another data container. Instead of creating a deck for 'Products' with a deck for 'Years' inside it, create a single deck for 'Products' and 'Years'. A selection expression that is a combination of the variables containing the desired year and product can be used to choose the proper card. Alternatively, one of the variables can be used to filter the deck and the other variable can select which of the remaining cards to display.

Testing and Debugging

In addition to the report diagnostics that are discussed in section 4.1.1, there are several other strategies that can be used to help test and debug reporting applications. The following image illustrates the dialog box presented to the user after right clicking on a reporting application that has been run from IBM Cognos Report Studio. The debug dialog box consists of Show Variables, Reset Variable, Info, Print, Copy Tab Control Recordset and Show Tab Control Recordset. The bottom half of the image illustrates the dialog box presented to the user after selecting the Show Variables menu item. In this example the dialog box shows the report author that the vProductLine variable has a value of Golf Equipment along with several other variable name and value combinations.

The Show Variables dialog box gives the author the current value of all variables and allows the author to understand how the variables are changing as a user interacts with the report. The Reset Variables option from the same right-click menu allows the report author to return the reporting application to its original state without having to exit the report.

Figure 29 Output of the View Variables debug menu

Appearance and Performance

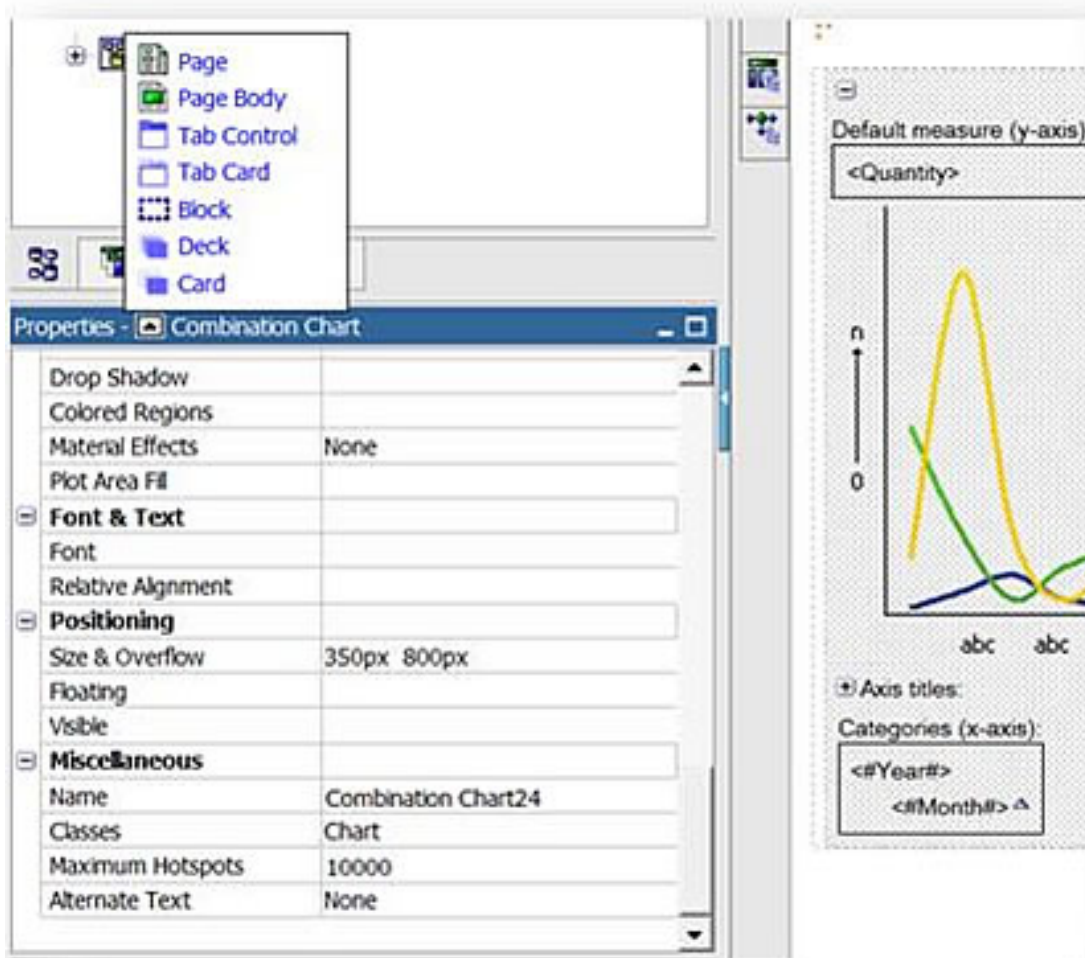
The timely interaction and visual appeal are two of the key features of an IBM Cognos Active Report that create a compelling end user experience. The following are some concepts to keep in mind when creating and styling a reporting application.

Object Sizing

Not all cards in a deck are necessarily the same size. When a different sized card is selected for viewing, other displayed objects may move to accommodate the new card. To the end user this appears as objects bouncing on the screen. This behaviour can be avoided by sizing objects. Fixed sizing can be applied to the objects on the card and to the deck to ensure they are all the same. Consistent object and deck sizing is also important when animation on the deck is enabled. If the size of a deck is not constrained and animation is enabled then the new card could potentially animate in from across the screen, which creates an undesirable experience for the end user. If the deck is set to the same size as the cards then the animation will be more natural because it will be constrained to only the area occupied by the objects in the card. The size of a control is configured by the Size & Overflow property in the Properties panel. Other properties such as horizontal and vertical padding can also be used to enforce spacing between various controls.

In order to impose size constraints, the author can start at the bottom of the object hierarchy and then move upwards by using the Ancestor button that is shown within the following image. In this example, the object hierarchy is displayed as Card, Deck, Block, Tab Card, Tab Control, Page Body and Page. The lowest object in the hierarchy in this case would be the Card. By starting at the lowest level and moving up the hierarchy, the author can ensure that proper sizing propagates through the reporting application.

Figure 30 The Ancestor button allows the author to traverse the layout hierarchy



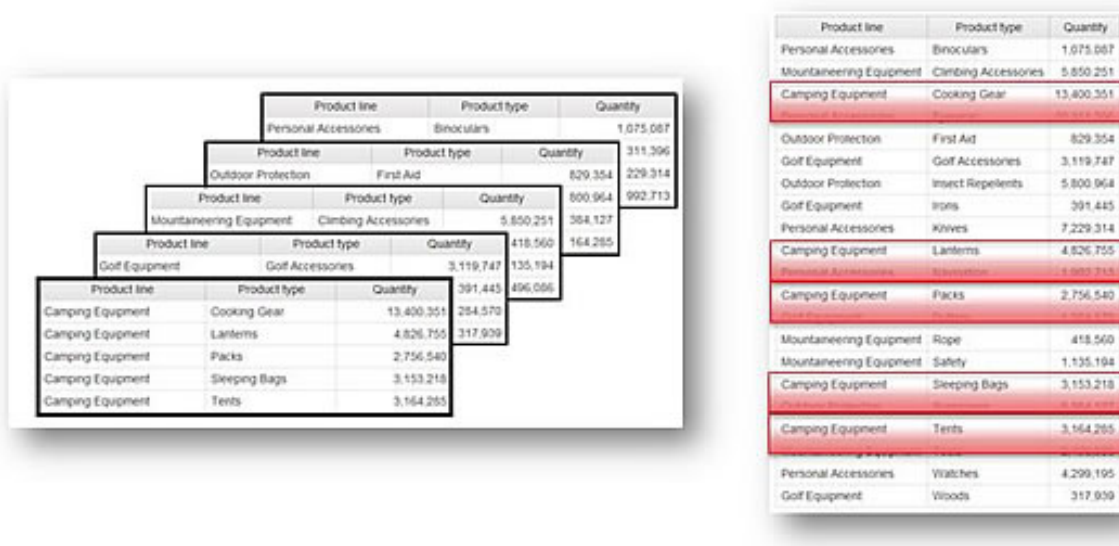
Bouncing can also appear on lists or crosstabs. As data is filtered, the width of the columns will automatically adjust to fit the data that is currently being shown. This behaviour can be avoided by assigning a fixed column width to every column of the list or crosstab. Additionally, it is important to keep in mind the amount of data that is contained in a list or crosstab when laying out a fixed size report. If the list changes to include more data then the height of the object will expand and push down the items below it. This will occur regardless of whether or not there is a size constraint on the height of the list and its container. To avoid this behaviour, the real estate allocated to the list should be set to the lists maximum size or it can be placed in a scrollable block.

Filtering versus Segmenting Data

Performance gains can be realized by segmenting list or crosstab data onto multiple cards instead of using the filtering functionality in the interactive behaviour area. As more data is included in the list or crosstab the performance gains become more noticeable and the end user experience is improved.

The following screen capture provides a visual representation of the differences between filtering and segmentation. The list report on the right hand side consists of Product line, Product type and Quantity. The Camping Equipment records are distributed throughout the list, interlaced with the other records in the list. This large list would need to be filtered to reveal only the Camping Equipment items. The left hand side shows multiple lists using the same data items that are included in the right hand list. Each list on the left includes only a single Product line. These individual lists can be constructed by including the larger list in a data deck that is driven by Product line with a Master Detail Relationship setup between the list and data deck. In this scenario, the author can then select which pre-filtered list should be presented to the end user.

Figure 31 A list segmented into cards to provide filtering functionality with improved performance



Optimizing Data Deck Queries

When working with dimensional data, if multiple dimensions drive a Data Deck and the fact table is large, it is possible to optimize the query and reduce the build time of the reporting application. Instead of dragging the dimensions into the Data Deck and having them put into the same query, a separate query should be built for each dimension and then a join operation with an expression of $1 = 1$ should be used to

create a new query. The Set Cross Product Allowed property for the new query must be set to Allow. The dimensions can then be brought into the Data Deck from the new query.

Aligning Data and Objects

When laying out a reporting application, use the right, left, centre and top, middle, bottom alignment controls that are accessible through the IBM Cognos Report Studio toolbar to get the desired object orientation. The alignment should be done as close to the object as possible. For example, when trying to centre a chart, the alignment should be set on the block or table cell that contains the chart. As previously mentioned, using the Ancestor button is an effective way to select containers that are nearest to the object that needs to be aligned.

Depending on the desired functionality an author needs to decide whether to use a block or a table as the object container. Tables are more flexible because rows or columns can be added to existing tables to quickly adjust a layout. They also support both horizontal and vertical alignment. Tables are unable to control the overflow of content so they get automatically increased in size if the contents are larger than the container. This behaviour can affect the layout of a fixed size dashboard. On the other hand, blocks do not support vertical alignment but they can control overflow by becoming a scrollable area or by clipping content.

Background Effects & Images

An author can use background effects or images to improve the visual appeal of reporting applications. It is important to note that for a background effect to appear, it needs to be applied to an area that is a fixed size. If relative sizing is used, the background effect for that area will not show up in the IBM Cognos Active Report.

Scaling Chart Axes When Using a Data Deck

When charts are used in a data deck and a Master Detail Relationship is set up, the maximum values of the data belonging to each chart can be significantly different. When this situation is encountered and the scale of the chart remains the same on each card, the resulting charts can end up being illegible. The same range for all instances of chart property can be used to address this issue. The property can be found in the Axis Range menu of the chart's Primary Axis properties. When this setting is unchecked, the axes of each chart in the data deck will be scaled to the data contained in that specific chart.

iPad Specific Guidance

The same IBM Cognos Active Report can be consumed in standard web browsers and by the IBM Cognos Mobile native iPad application. If the use case for a specific reporting application is mobile centric and it will frequently be consumed on the iPad then there are some design considerations that can be taken into account to

optimize the end user experience.

Report Dimensions and Sizing

When a reporting application is larger than the iPad screen it becomes scrollable. A swiping gesture on the report allows the end user to view the off screen areas of the report. If the author wants the report to fit the iPad screen perfectly then the report should be sized to 1024 x 704 pixels. When these dimensions are used, the padding property of the Page Body must be explicitly set to 0, otherwise it will default to a value of 2 and the report will scroll. Using iPad screen sizing improves the end user experience because the entire report will be visible at any given time. These dimensions transfer well to the desktop and the report is easily consumable across multiple platforms.

When creating a fixed size report it is important to plan the report layout and ensure that all objects and containers are sized properly. As discussed in the previous sections, if an object is larger than its container, the container could be pushed out and the entire report layout will be affected. This means that proper sizing must be applied to all objects and propagated throughout the entire object hierarchy in order to maximize screen real estate and avoid scrolling. Simply sizing the page of the reporting application to iPad specific dimensions will not give the desired result if the objects contained within the page are not properly sized.

Scrollable Areas

It is common practice when designing reporting applications for the desktop to nest large objects such as lists inside a smaller block with scrolling enabled. This minimizes the impact on overall screen real estate and still allows the user to view all of the detail contained within the object. On the desktop these scrollable areas are identified with scrollbars on the block. In order to remain consistent with established iOS navigation standards, scrollable areas on a reporting application when rendered in the IBM Cognos Mobile native iPad application do not have visible scrollbars. Furthermore, the iOS gesture to navigate these areas is a two finger scroll. This gesture is unintuitive to inexperienced iPad users so authors who are going to utilize scrollable blocks should ensure that their users are made aware of this iOS gesture. The following screen capture displays two lists consisting of Product line, Product type, Quantity, Revenue and Gross profit. The list on the left represents the desktop view and shows the scroll bars to the right of the Gross profit column. The list on the right represents the iPad view and does not have a scrollbar to the right of the Gross profit column.

Figure 32 Difference between a scrollable area on the Desktop and iPad

Behavior on Desktop

Behavior on iPad

Product line	Product type	Quantity	Revenue	Gross profit
Camping Equipment	Cooking Gear	13,400,351	\$272,835,964.18	\$105,707,837.66
	Lanterns	4,826,755	\$126,925,660.64	\$54,117,294.63
	Packs	2,756,540	\$351,880,402.84	\$138,647,506.69
	Sleeping Bags	3,153,218	\$309,172,888.35	\$121,613,044.18
	Tents	3,164,285	\$526,221,728.02	\$167,313,407.49
Golf Equipment	Golf Accessories	3,119,747	\$51,514,343.88	\$31,586,735.03
	Irons	391,445	\$254,814,337.99	\$119,211,864.90
	Putters	1,284,570	\$106,184,271.37	\$50,684,498.23

Touchable Regions

When reporting applications are going to be used on the iPad it is important to remember that items that are easily selectable by a mouse on the desktop may be difficult to press on a touch interface. This is not a concern with standard IBM Cognos Active Report controls as they conform to Apple's Human Interface Guidelines but is important when implementing objects such as maps. On the iPad, a small area on the map may be difficult for a user to select so an alternative control should also be provided. A simple solution is to create a control such as a drop down list that has the same selection options as the map in order to provide users with the flexibility of using either the map or the list to drive their interactions.

Swipe Gesture

In order to create a user experience that takes advantage of standard touch interface interactions, the swiping gesture can be implemented on Decks or Data Decks. This functionality is complemented by the Iterator control, which can be configured to appear as page dots to indicate the current selection. The following high-level procedure can be followed to enable swiping and obtain the corresponding page indicator dot look and feel for the Iterator control:

- Ensure that the Iterator and the Deck are driven by the same values
- Create a variable to be used to control the selection
- Configure the Interactive Behaviour of both the Iterator and the Deck so that each control sets (Set Variable Values) and is selected by (Container Select) the same variable
- Enable the desired Slide Animation Direction effect on the Deck
- For the Iterator control, ensure that the Iterator First, Iterator Previous, Iterator Next and Iterator Last properties are set to Hide. Only the Iterator Label Area should be set to Show.

- Select the Iterator Label Area on the canvas and set the Select UI property to Page Dots Indicator

The detailed step by step instructions for creating a swipeable Data Deck that shows the historical revenue for each Product line in a separate line chart is shown below:

1. Within IBM Cognos Report Studio, create a new Blank Active Report.
2. From the available Toolbox items, drag a Data Deck object onto the report canvas.
3. Click on the Data Deck and within the bottom left hand Properties pane, change the Name property within the Miscellaneous section to ProductLine_Data_Deck and change the Slide Animation Direction property within the General section to Auto Horizontal.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Swipe_Deck_Query.
5. Using the Page Explorer tab, return to the report view by clicking on Page1.
6. From the available Toolbox items, hold the right mouse button and drag the Data Iterator object onto the report canvas and place the control under the Data Deck.
7. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.
8. When prompted for a query, select Swipe_Deck_Query and press the OK button.
9. Click on the Data Iterator and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine_Data_Iterator.
10. Within the bottom left hand Properties pane, locate the General section and set:

```
Iterator First to Hide  
Iterator Previous to Hide  
Iterator Label Area to Show  
Iterator Next to Hide  
Iterator Last to Hide
```


11. Click on the Label area of the Data Iterator in the report canvas and within the bottom left hand Properties pane under the General section, change the Select UI property to Page Dots Indicator.
12. Using the available source items, populate the ProductLine_Data_Iterator Label drop zone with the GO Sales(query)\Sales(query)\Products\Product line.
13. From the available Data Items drag Product line from the Swipe_Deck_Query into the Values drop zone of the ProductLine_Data_Deck.
14. From the available Toolbox items, locate the Chart object and drag it into the Data Deck named ProductLine_Data_Deck.
15. Within the Insert Chart dialog box, select line chart and press the OK button.
16. Click on the Chart and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine_Chart.
17. Using the available source items, populate the Line Chart object with the GO Sales(query)\Sales(query)\Products\Product line on the Series, the GO Sales(query)\Sales(query)\Time\Year as the Categories and GO Sales(query)\Sales(query)\Sales\Revenue as the measure.
18. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Chart_Query.
19. Using the Page Explorer tab, return to the report view by clicking on Page1.
20. Select the Chart object and within the left hand Properties pane under the Data section, select the Master Detail Relationships property by clicking the ellipsis.
21. Within the Master Detail Relationships dialog box, define a relationship between the Swipe_Deck_Query and the Chart_Query by clicking the New Link. This should link Swipe_Deck_Query \ Product line to Chart_Query \ Product line.
22. Click the OK button to commit the relationship and return back to the report page.

23. Click the Interactive Behavior icon to the right of the Data Deck.
24. Double click on the Set Variable Values area of the Interactive Behavior dialog box.
25. Select the Create a New Variable link and create a variable named varProductLine with a Data Type of String and a default value of 'Camping Equipment'. Click OK to return to the Set Variable Values dialog box.
26. For varProductLine, change the Value field from Do not set to Product line and click OK to return to the Interactive Behavior dialog box.
27. Double click on the Container Select area and select the Data Item radio button from the Item area on the left hand side of the dialog box. Ensure that Product line is selected from the drop-down menu.
28. Set the value in the Operator drop-down menu to IN.
29. Select the Active Report Variable radio button from the Item area on the right hand side of the dialog box and ensure that varProductLine is selected from the drop down menu.
30. Click OK three times to commit the modifications to the Data Deck's interactive behaviour.
31. Click the Interactive Behavior icon to the right of the Data Iterator.
32. Double click on the Set Variable Values area of the Interactive Behavior dialog box.
33. For varProductLine, change the Value field from Do not set to Product line and click OK to return to the Interactive Behavior dialog box.
34. Double click on the Container Select area and select the Data Item radio button from the Item area on the left hand side of the dialog box. Ensure that Product line is selected from the drop-down menu.
35. Set the value in the Operator drop-down menu to IN.
36. Select the Active Report Variable radio button from the Item area on the right hand side of the dialog box and ensure that varProductLine is selected from the drop down menu.
37. Click OK three times to commit the modifications to the Data Iterator's interactive behaviour.

38. If this IBM Cognos Active Report is executed, it will display a line chart for the revenue of Camping Equipment. The Data Iterator will appear as Page Dots Indicator below the chart. In the desktop browser, clicking on the various page dots will change the chart. When this same report is consumed in the IBM Cognos Mobile native iPad application, the user can use the swipe gesture on the chart to transition to the next chart.

Common IBM Cognos Active Report Functionality

The flexibility of IBM Cognos Active Report controls allows a wide variety of functionality to be implemented. The following sections will present commonly used techniques that leverage standard controls to deliver compelling end user experiences. IBM Cognos Active Report outputs that demonstrate the functionality and the corresponding report specifications are included in ARFunctionality.zip. The report specifications are built from the GO Sales dataset and the GO Sales (query) package so IBM Cognos customers can open and fully interact with the reports in IBM Cognos Report Studio.

Default Cards

When the variable that controls the selection of a Deck is empty or does not match a card name then a default card can be used to show content to the user. This is useful for displaying summary information to the user before they make a valid selection. Changing the Default Card property in a Deck's property panel to Yes will enable the default card. When this feature is enabled a new No Data Contents icon appears above the Deck. The author can select this icon to view the default card and add report objects.

Making Use of the No Value List Item

When working with a List or Drop-Down List an additional item can be added to the list. The author has control over the text that is shown and when it is selected the variable that is set by the list is cleared. This functionality can be used to accomplish several design goals. For example, if list selection is being used to filter an object then the extra item can be labelled Show All and when it is selected all filters will be removed. Additionally, it could be used to select a default card in a deck. To enable this functionality select the List or Drop-Down List and change the No Value List Item to Show.

Calculating Summaries in the Output

When the end user dynamically filters a List or Crosstab, the Summarize in Output functionality can be used to aggregate the data that is currently being shown in the

filtered object. The supported aggregation methods are total, count, average, minimum and maximum. This functionality can be accessed through the Summarize menu on the IBM Cognos Report Studio toolbar. This feature will ensure that the correct summary information is always presented to the end user as they interact with a List or Crosstab.

Clickable Regions

There are multiple areas of objects that can be used to drive interactivity. The Clickable Regions property can be used to set which areas of each object are selectable. The menu will adjust to reflect the correct options for each object.

Showing and Hiding List Columns or Crosstab Columns and Rows

The visibility of list columns can be controlled by variables. The Column Visibility menu that is accessible in the List Column Body Properties panel allows the author to set the visibility based on a condition. A multi-select control such as a Check Box Group can be used to control which columns in the list are visible. This allows the end user to show only the information that they are interested in on the screen. The same concept can be applied to hiding and showing crosstab rows and columns. This crosstab functionality can be accessed in the Container Filter menu of the Crosstab Properties panel. This functionality is demonstrated in the supporting file *Toggled List Column Display.mht*.

Sorting List Columns

List column sorting can be enabled by selecting the appropriate column and changing the Allow Sorting property to Yes. This will allow the user to toggle sorting on or off and enables sorting in both ascending and descending order.

Drilling Through to a Live Report

Drill-through can be used to provide the end user with access to more details on demand while they are connected. This functionality allows summary level dashboards to be built without sacrificing the ability to get to more detail when required. To ensure that context is not lost while drilling through, parameter values or data item values can be used to populate prompts in the target report. In order to setup a drill-through, the Drill-Through Definitions menu in the Properties panel for report objects can be used.

Expandable and Collapsible Regions

To save screen real estate the report author can choose to hide areas of a reporting application. This type of functionality can be particularly useful for showing or hiding filter criteria or additional metrics that are not frequently used. To accomplish this an author can include the information they want to hide on a card of a Deck and create an empty card in the same Deck. A variable can be used to determine whether the

card with content or the blank card should be shown. When the blank card is active, the content will not be visible and objects beside the Deck will collapse into its location. When the variable is changed to select the card with content, the layout will adjust to reveal the additional detail. This functionality is demonstrated in the supporting file *Hidden Report Regions.mht*.

Disabling Until a Condition is Met

An author can disable the use of controls or hide content from the end user until a condition is met. This is useful for when additional functionality or detail will only be shown if a particular item is selected. To disable the use of a control based on a condition the Control Enable functionality in the Interactive Behaviour menu can be used. To hide content until a condition is satisfied, a Deck with an empty default card can be used. Alternatively, the default card can be used to provide a cue to the end user that more information is available if they make the proper selection. This functionality is demonstrated in the supporting file *Disabling Until a Condition is Met.mht*.

Creating Custom Content Buttons

The IBM Cognos Active Report Button control provides the author with a simple way to implement a standard look and feel button. For some applications the author may choose to create a button with a customized look and feel. To accomplish this, a List object can be used. In order to create a single button, a single cell list is created. This is done by including a single data item in a list and then selecting the List Column Title and setting the Box Type property to None. The cell can then be styled with a background colour or image to create the desired look and feel. Arrays of buttons can be constructed by including this functionality in a Repeater Table. This functionality is demonstrated in the supporting files *Custom Buttons.mht* and *Repeaters and Buttons.mht*.

Cascading Prompt Controls

Cascading prompts are useful for interacting with a reporting application when there is hierarchical data. Cascading prompts allow the end user to progressively filter their data in an intuitive way instead of presenting a long list of items and forcing the user to search for their desired selection. To build a cascading prompt, each control must be filtered by the selections made in all of the higher-level controls. In order to accomplish this, all of the higher-level items must be included in the Values section of each control so that they are present in the control's query. The author can also choose whether or not they want to allow the user to immediately select a value from the lowest level prompt or whether they want to force a selection in all controls. If the author wants to force selection, then the Control Enable functionality can be used. Alternatively, the author can hide lower level prompt controls and enable progressive

disclosure by putting all of the lower-level controls into their own Decks. The default card functionality can then be used to choose when to reveal the control to the end user. Using this technique, animation can be enabled on the Decks to make it appear to the end user like the new controls are sliding into view after a selection is made. This functionality is demonstrated in the supporting files *Cascading Prompt.mht* and *Cascading Animated Prompt.mht*.

Tree Control

An alternative to the cascading prompt that provides similar functionality and benefits for efficiently making hierarchical selections is the tree control. The tree control makes use of lists to display each section of selection options. The various levels of the selection hierarchy are contained in separate Decks and variables are used to filter the display Lists and show or hide Decks to provide the desired functionality. This functionality is demonstrated in the supporting file *Tree Control.mht*.

Creating a Scrolling Key Metrics Area

The focal point of many dashboards is a key metrics area that provides the business user with a high level view of their key performance indicators. In IBM Cognos Active Report, these metric areas can be updated based on user selection. To accomplish this functionality, the metrics area should be built in a Data Deck that is driven by the same item as the selection control. To get the proper values to show up, a Text Item should be used with the Source Type set to Data Item Value. The Data Item Value property should then be set to the measure that will be displayed. In order for the measure to appear as an option in the Data Item Value property it must be included in the query that the Data Deck is using. This functionality is demonstrated in the supporting file *Top Metrics.mht*.

User Toggled Conditional Styling

Conditional styling is used to highlight areas of interest within a report object. By providing the end user with the flexibility to control the criteria of the conditional styling, they can quickly navigate between different visual indicators of performance. For example, the user can choose whether they want the best or worst performers highlighted. To accomplish this, the report object should be duplicated on multiple Cards in a Deck. Different conditional styling should then be applied to the objects on each Card. The title of each Card should reflect the conditional styling that is present on that Card. A selection control should then be connected to the Deck that allows the user to select the conditional styling they want to view. This functionality is demonstrated in the supporting file *Toggled Conditional Styling.mht*.

Sliding to Visualize Deltas Over Time

To gain an understanding of how information within a chart is changing over time a Discrete Value Slider can be used to update the chart. To implement this functionality the chart should be placed in a Data Deck that is driven by the desired time period. Once the proper Master Detail Relationship is setup a Data Discrete Value Slider can be connected to the Data Deck to control the selection. If the Update Variables Live property of the Data Discrete Values Slider is set to Yes then the chart will update as the slider is dragged. This functionality is demonstrated in the supporting file *Sliding to Visualize Changes.mht*.

Drilling Down to Details

End users often want access to additional detail and in order for this to be made available offline, a drill down must be authored into the reporting application. The different levels of detail need to be included in separate Decks or Data Decks. When a selection is made and a user wants to drill down, variables and Default Card functionality is used to hide the current Deck and reveal the Deck that contains the lower-level information. An advantage of this approach is that the data can be represented in a different form at each level. For example, Product Line Revenue can be shown in a list and when the user drills into Product Line, the Product Type Revenue could be shown against the planned values in a Bullet Chart. In order to allow the user to navigate back up the drill path a breadcrumb trail should be left. This can be made of a variety of controls that set the variables such that the user is returned to the desired level of detail. This functionality is demonstrated in the supporting file *Drill to Details.mht*.

Scrollable Selection Controls

List Box, Check Box Group and Radio Button Group controls can become large if they contain many selection options. In order to save screen real estate an author can enable scrolling so that only a portion of the selections are visible at any given time. The List Box automatically becomes scrollable when the contents are larger than its size. This does not occur for the Check Box Group and Radio Button Group controls. In order to enable scrolling on these controls they should be placed inside a fixed sized block with Overflow property set to use scrollbars only when necessary. The Overflow property can be found inside the Size & Overflow Property dialogue box. This functionality is demonstrated in the supporting file *Scrollable Control List.mht*.

Clickable Exploding Pie Slices

The exploding pie slice functionality is useful for providing a visual indication of selection. It also increases the level of interactivity on the pie chart and improves the

end user experience. To accomplish this functionality, the pie chart must be placed into a Data Deck that is driven by the same item as the Pie Chart Series in order to generate a unique version of the chart for every possible exploded slice. The Pie Chart and Data Deck must also use different queries. To ensure that the correct slice is exploded when it is selected, a selection connection must be setup between the Pie Chart and the Data Deck. Additionally, the Exploded Slices property of the Pie Chart must be setup to use an expression such that [Pie Chart Query].[Pie Chart Series Item] = [Data Deck Query].[Pie Chart Series Item]. This functionality is demonstrated in the supporting file *Exploding Pie Slice.mht*.

Scrolling Marquee of Data

The scrolling marquee can be used to passively display key metrics or information that will continually scroll across the screen. This gives the end user a stock ticker like experience. In order to accomplish this, the desired string should be built within a Repeater control. The string can be built by using multiple Text Item controls that use Text, Data Item Value or Data Item Label as the Source Type. The Repeater should then be placed in a fixed sized Block with an HTML Item. The HTML in the HTML Item should be '<marquee>' and the Block Overflow should be set to content is clipped. This functionality is demonstrated in the supporting file *Scrolling Marquee.mht*.

Embedded Videos

Reporting applications can display video content for the end user. This functionality is enabled with an HTML Item. The HTML Item describes the size of the frame that will display the video and the source of the video. A user must be connected in order to consume a video. This functionality is demonstrated in the supporting file *Embedded Videos.mht*.

Absolutely Positioning Content

When a dashboard is built using fixed sizing it is possible to overlay additional report objects. For example, when selecting different regions on a map, a chart that provides additional details can be overlaid on that location. In order to accomplish this, HTML Items that describe the absolute pixel location of the object are used. The HTML sets the base location of the object and then based on selections made in the reporting application; the HTML can offset the location of the object to make it appear in the proper location. This functionality is demonstrated in the supporting file *Absolutely Positioned Content.mht*.

Creating an IBM Cognos Active Report Dashboard

The following sections will step a user through the process that should be followed when designing an IBM Cognos Active Report. A basic example will be presented to illustrate the workflow.

The Use-Case

Ed, the Vice President of Sales for the Great Outdoors Company, is responsible for expanding the company's market share globally. Ed closely monitors the revenue that is generated through the company's main sales channels and directly oversees a team of Territory Managers that are responsible for regional growth. He spends most of his time travelling and meeting with key customers. While on the road, Ed needs to be able to monitor the performance of his sales organization to ensure that the company is meeting their growth targets. He has increasingly been using his iPad for all of his communication needs, especially while travelling. Ed needs access to enough detail so that he can identify areas of concern and delegate further analysis to his management team.

Identify Requirements and Choose a Technology

After receiving the use-case, the author must now evaluate the key requirements of the dashboard and pick the IBM Cognos technology that will be best suited to solving the business problem. When evaluating IBM Cognos Active Report as a potential solution, the use-case should be evaluated against the key features of the solution in order to ensure a successful deployment. The key aspects of this particular scenario are:

- **Business Problem:** The VP of Sales needs to be able to monitor the company's performance against their targets. Ed needs to be able to quickly identify any emerging trends that could negatively impact the revenue of the company and take corrective action before it is too late.
- **Key Features of the Solution:**
 - **Summary Level:** Ed is responsible for global sales and requires summary level data. Ed does not drive his own analysis. He instead chooses to delegate this work to Territory Managers.
 - **Portable:** Ed spends most of his time travelling which means he will need to be able to access his BI information from his mobile device. Additionally, Ed may not have access to a consistent network connection so the ability to consume content offline is important.

In this situation, the requirements for a portable and disconnected solution make IBM Cognos Active Report an ideal solution. Additionally, since Ed deals with summary level data, all of the information that he requires on a daily basis can be included in a single high performance reporting application.

Designing the Dashboard

In order to simplify the overall dashboard creation process, the author should carefully plan out the design of the dashboard before beginning the assembly.

Identifying the Information Needed to Solve the Business Problem

With IBM Cognos Active Report identified as the proper technology, the author must now determine what information needs to be included in the dashboard to solve the business problem. Only information that will be used on a daily basis should be included in the reporting application. Additional detailed data that will not routinely be accessed should be authored into a separate report that will be a drill-through target from the high level dashboard. This will prevent the reporting application from becoming unnecessarily large.

Another factor to consider is the time sensitivity of the data and how it relates to the use-case and deployment scenario. For example, if the dashboard will be scheduled so that Ed receives a fresh version every Monday but it is known that he often tracks closed deals on a daily basis, then the closed deals information should be made accessible with a drill-through so that he always gets the freshest information when he accesses that portion of the report.

Determining the Layout

The first decision that needs to be made is what layout strategy will be used for the reporting application. This requirement should be driven by the use-case. For example, if the use-case is iPad centric then the layout should be a fixed size of 1024 x 704 to provide the best user experience. If the use-case is broad distribution for predominately desktop consumption then using a layout that uses relative sizing may be prudent. It is likely that this will create a reporting application that requires scrolling to reveal off-screen content on the iPad, but the experience on desktop monitors will be optimized. The author must make this decision with careful consideration of the requirements because it will impact the end user experience. In this specific scenario, the end user is often travelling so the iPad specific sizing will be used as the layout strategy.

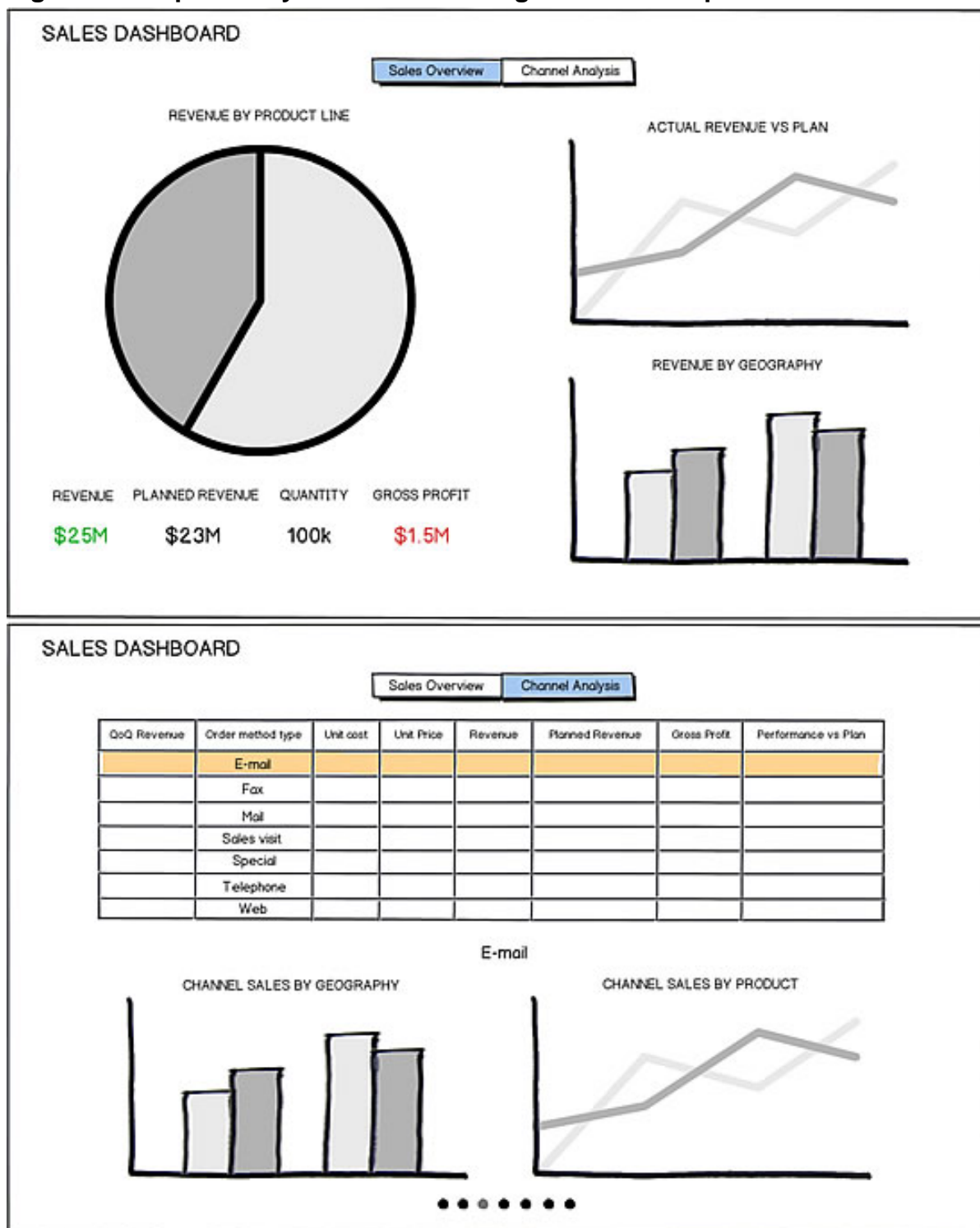
Before beginning the construction of the dashboard it is recommended that the author create sketches of the layout to better understand the overall functionality of

the dashboard. A proposed layout for the dashboard is shown in the image below. This dashboard highlights Ed's main areas of interest, sales by territory, performance against plan and sales by channel. As is the case with this dashboard, individual analysis areas are often separated into discrete sections for easy navigation. This layout uses a button bar at the top of the dashboard to navigate between the two main sections of the report, Sales Overview and Channel Analysis.

The interactivity in the Sales Overview section is driven by an exploding pie chart in the top left corner. The pie chart shows the revenue breakdown by product line and when the end user selects a slice of the pie, the rest of the content updates to show additional detail about the selected product line. The key metrics area that is directly below the pie chart provides the user with high-level information including revenue, planned revenue, quantity and gross profit for the selected product line. Upon selection, the metrics area will scroll vertically to provide the user with a visual cue that the data has updated. Conditional formatting will also be used to draw the end users attention to areas of concern. Two additional graphs are stacked vertically to the right of the pie chart and show a time series and a geographic comparison of actual revenue versus planned revenue for the selected product line.

The Channel Analysis section consists of a summary level list that covers the top half of the dashboard with more detailed charts below that update based on the channel that the user selects in the list. The list will include a spark line chart for quarter-over-quarter revenue and a bullet chart to show the performance versus plan for channel revenue. Additional data in the list will include unit cost, unit price, revenue, planned revenue and gross profit. The detailed charts will show a geographic comparison of planned versus actual revenue and a time series of revenue by product line for the selected channel. The charts at the bottom can be navigated on the iPad with a swipe gesture and the channel that is currently being shown will be highlighted in the list. The Iterator control with Page Dot Indicators will be placed below the charts to provide a visual cue that swiping is enabled.

Figure 33 Proposed layout of the IBM Cognos Active Report dashboard



The dashboard proposal should now be communicated with key stakeholders to align on the content, layout and level of detail. The authoring effort will be significantly reduced if the core functionality is agreed upon before design iterations begin.

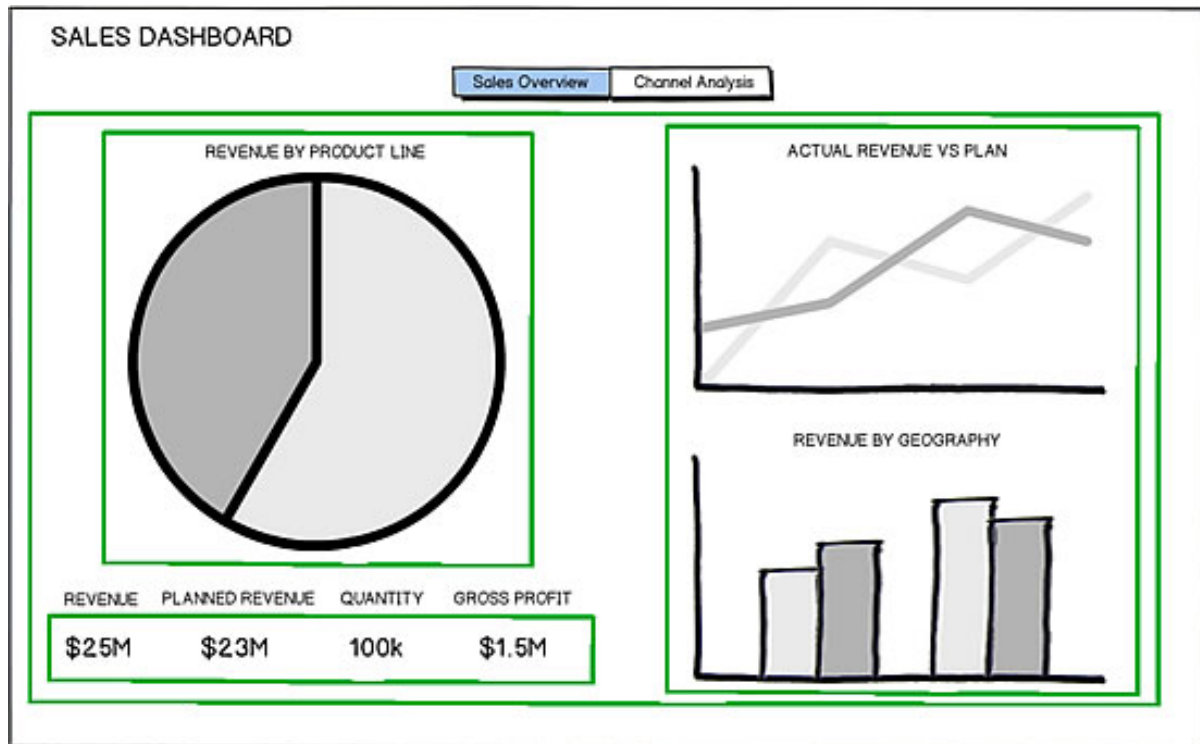
Building the Dashboard

Once the desired layout and functionality is finalized, the construction of the dashboard can begin. The construction of the dashboard can be segmented into several steps.

Build the layout and add controls

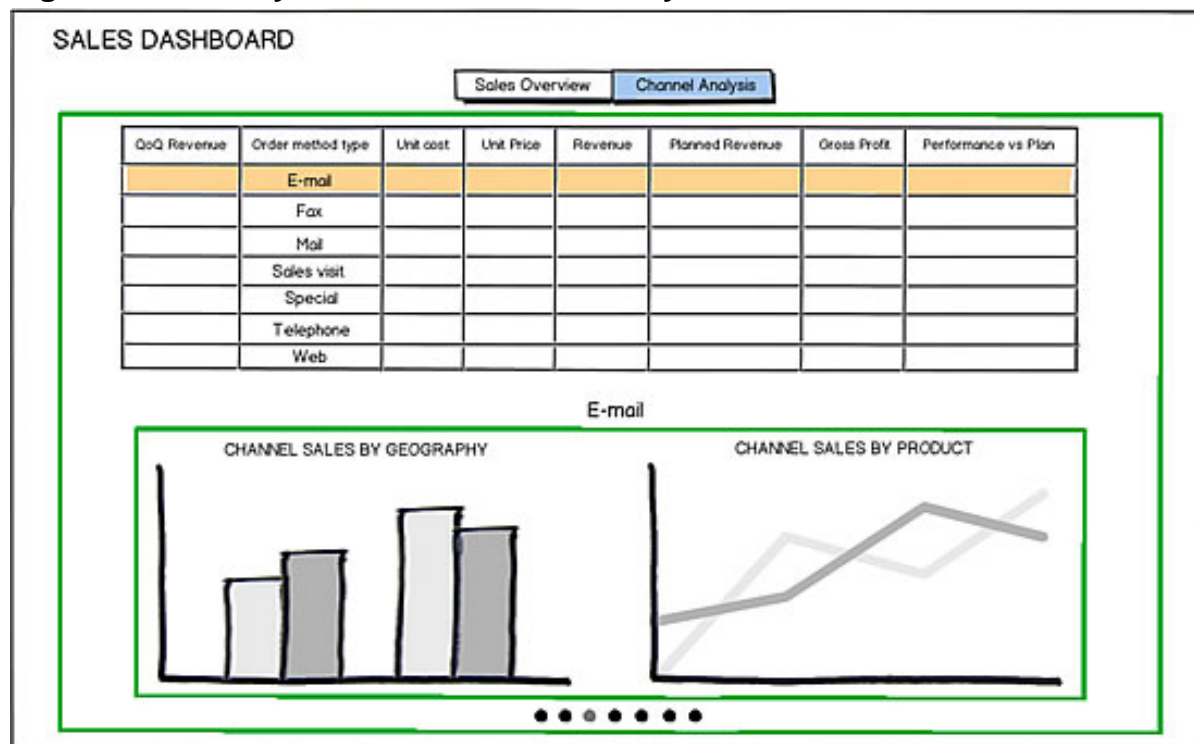
The first thing to consider when beginning a layout is where Decks are going to be used and what interactivity they will provide. For example, in this scenario a button bar is being used to navigate between the main sections so a Deck will need to be used to support this functionality. A standard Deck will be used because it is known that there are two unique sections, each of which will be built on its own Card. As shown in the image below, on the Sales Overview Card there are three separate Data Decks that are needed to achieve the desired functionality. All three Decks will be Data Decks because they all need to provide a unique view for each member of Product Line.

- **Pie Chart Deck:** This deck contains only the pie chart and its purpose is to enable the exploding slice functionality that shows which product line is currently selected. No animation will be enabled on this deck so to the end user it will appear that the slice they select instantly pops out.
- **Metrics Deck:** This Data Deck holds the numeric values in the key metrics area. It is in a separate deck because vertical animation will be used on this portion of the report to provide a visual indication that the content has updated. The titles of the metrics are not included in the Data Deck in order to prevent the titles from animating on selection.
- **Detailed Charts Deck:** This Data Deck includes the detailed charts to the right of the pie chart. They are in a separate Data Deck in order to accomplish the desired report layout. Animation will not be enabled on this Deck so it will appear that these charts update in place.

Figure 34 Deck layout for the Sales Overview Card

For the Channel Analysis Card only one additional deck is required. As shown in the image below, a Data Deck is required for the detailed charts that are below the summary list. A Data Deck is used because unique content is required for each member of Sales Channel. Auto Horizontal animation will be enabled on this deck to support the iPad swiping functionality.

Figure 35 Deck layout for the Channel Analysis Card



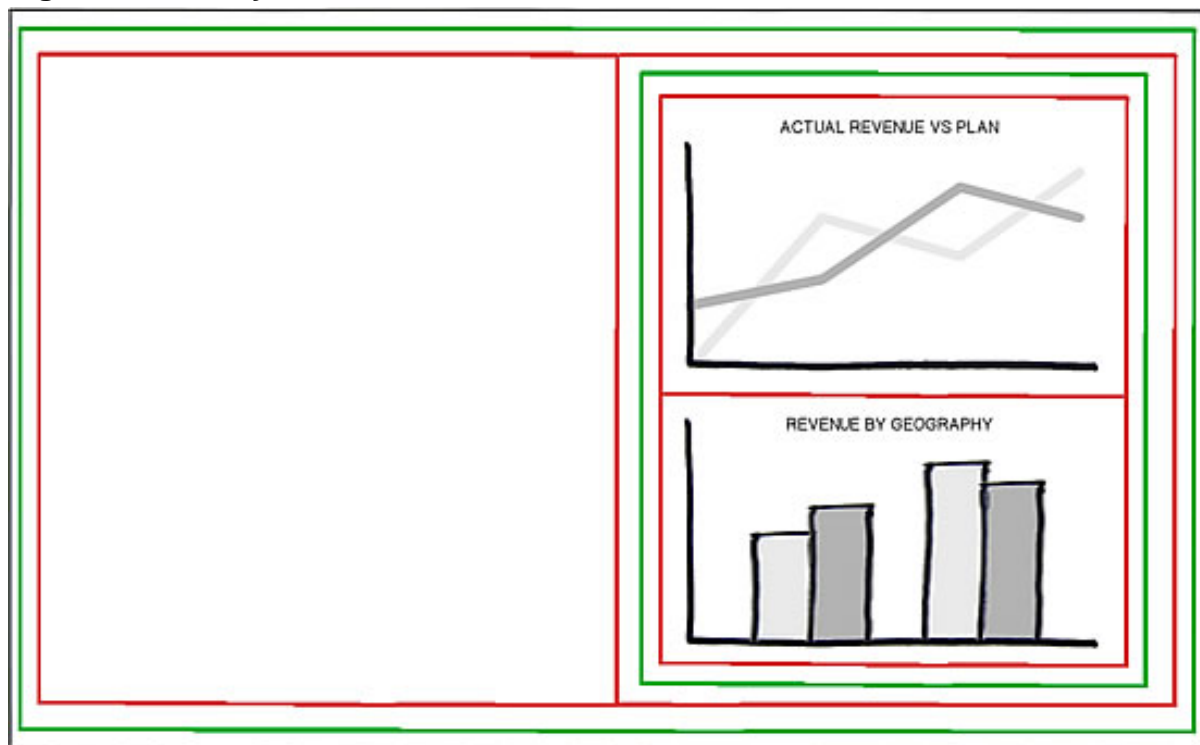
With the required Decks finalized, the report layout can now be constructed. In order to achieve the desired layout, Tables and Blocks should be used. In this scenario, Tables will be used because they are more flexible and this dashboard does not require any scrollable areas. As shown in the image below, the first step of laying out the report is to create a table that divides the dashboard into its main sections. In this case, it is a Table with three rows and one column. The first row will hold the title text, the second row contains the Button Bar that selects the visible section and the third row will hold the Deck that contains each main section on a Card.

Figure 36 The main dashboard layout Table



The content of each main section can now be laid out on their own Cards in the Deck. In order to create the desired layout, it will be necessary to nest Tables inside of Decks or Table Cells. As shown in the image below, the detailed charts on the right side of the Sales Overview Card can be placed by first dividing the Card into two columns and one row with a Table. The right column can then be populated with a Data Deck to support the desired interactivity. This Data Deck will have a Table with two rows and one column placed on its Card. A chart will be placed in each Table Cell, which will allow the orientation of the detailed charts to be fixed. This process can be used to place the remaining objects required on the dashboard.

Figure 37 The layout of the detailed charts on the Sales Overview Card



Set up the functionality

Once the objects and controls are properly placed, the interactivity can be authored into the reporting application. The authoring guidelines and best practices that were presented throughout this document should be utilized when building out and testing the interactivity.

After the desired interactivity is achieved, the dashboard should again be socialized with stakeholders.

Apply appropriate sizing

After the layout and functionality is completed, fixed sizing should be applied to the objects in the dashboard in order to ensure that the reporting application fits the iPad screen. With an overall reporting application size of 1024 x 704 pixels, the individual object sizes all need to be determined so that the usage of screen real estate can be optimized. Sizing should be applied to both the objects and their containers. It is also important to consider spacing while doing this exercise. For example, the detailed chart section of the Sales Overview Card could be sized so that each chart is 350 x 200 pixels and the table cells that contain each chart are 375 x 225 pixels. The charts can then be centre and middle aligned in the Table Cells to provide appropriate spacing between the objects. The Deck that holds these objects would then need to be sized to match the Table within it, which would have a total size of 375 x 450 because the charts are arranged vertically. The size of this Deck then propagates upwards to drive the size of its container and this process continues until all objects and containers are properly sized.

Before beginning to size objects it is useful to return to the original sketches of the dashboard and apply rough sizing to all objects. This will ensure that all of the sizes will sum to the correct value and screen real estate decisions can be made before the sizing has been hardcoded into the reporting application.

Styling the dashboard

Styling of the dashboard should be the last task when creating an IBM Cognos Active Report. A consistent look and feel should be applied to all controls, data, layout objects, images, icons and text. Classes, Templates and Layout Component Reference objects should be used for a number of reasons. These objects will reduce the time required to apply and adjust styling and will also provide a library of design styles that can be reused for other reports. Classes also have an additional benefit, if used they reduce the size of the MHT output file, which will improve transfer time across networks and load times in the browser or IBM Cognos Mobile iPad application.

About the authors

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Jeff is a Product Manager for IBM Cognos Business Intelligence. He is responsible for IBM Cognos Active Report, a disconnected interactive reporting solution, and IBM Cognos Mobile. Jeff works closely with customers and IBM R&D to drive product strategy.

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